

# ramsey

**WIN! Monthly Giveaways!**

 Visit [ramseykits.com](http://ramseykits.com)  
 See page 62  
 No purchase required

## WE PUT THE FUN IN ELECTRONICS!

### 8Ch Ethernet Controller

Control and monitor up to 8 separate circuits over your Ethernet network! Reach out to any of your devices or equipment with a standard web browser or even a mobile device! 8 channel relay outputs make a breeze to interface!

(See page 45)

**only \$169.95**

### Stereo Platform Gain Controller

The ultimate stereo audio processor acts like a limiter and compressor but preserves the audio dynamics of your original signal! Great for the broadcaster or serious audiophile!!

(See page 5)

**only \$179.95**

### Digital Audio Recorder

This little board records up to 8 minutes of audio with its built-in electret condenser mic or an external line input! Plays back directly to a speaker or line outputs! Adjustable sample rates and remote switch control!

(See page 25)

**from \$32.95**

### Passive Aircraft Monitor

Our patented aircraft receiver monitors the entire airband without any tuning! Great for air shows, and for the traveler. Without a local oscillator it creates no interference and can be used safely on board. Great at airports to hear what's really going on!

(See page 49)

**only \$89.95**

### Signal Magnet Antenna

The impossible AM radio antenna that pulls in the stations and removes the noise, interference, and static crashes from your radio! Also helps that pesky HD AM Radio stay locked!

(See page 54)

**only \$89.95**

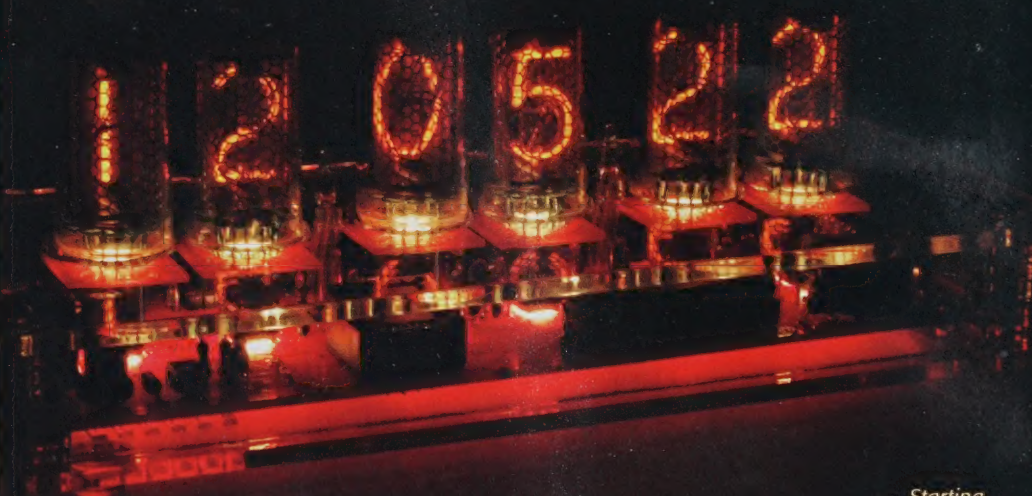
### Green Level-V 12VDC Adapter

Go Green with this brand new 12VDC 1A regulated power supply! Global input of 100-240VAC makes it compatible anywhere, and because it's certified Level-V Green, you will save money and be compliant where they are required... or will be in the near future!

(See page 72)

**only \$9.95**

## NEW! Next Generation Nixie Clocks!


 Starting  
 On Page-8

## THE NEATEST AND THE GREATEST STUFF!

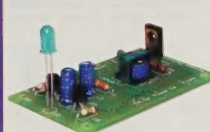
### FM Stereo Transmitter Kits



See page 4

**from \$47.95**

### Tickle Stick Shocker



See page 29

**only \$9.95**

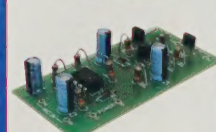
### Van de Graaff Generators



See page 29

**from \$139.95**

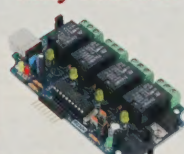
### Automatic VOX Voice Switch



See page 37

**only \$9.95**

### 4-Channel USB Relay Controller



See page 45

**only \$59.95**

### Super Ear Stereo Amplifier



See page 25

**only \$9.95**

### Compact DMM With Data Hold



See page 69

**only \$13.95**

### Doppler Direction Finder



See page 51

**only \$169.95**

## Build It, Learn It, Achieve It, Enjoy It!



**from \$9.95**

You can learn how to solder, learn electronic and radio theory, and everything in between! From an AM/FM IC radio to the 500-In-One Lab, we have what it takes! (Starts on page 56)

[www.ramseykits.com](http://www.ramseykits.com)
**800-446-2295**



- ✓ All Of Our Products!
- ✓ Giveaways!
- ✓ User Forums!
- ✓ Manual Previews!
- ✓ Live Webcams!
- ✓ Specials & Closeouts!
- ✓ Downloads!
- ✓ And A Whole Lot More!



[Home](#)
[About Us](#)
[Contact Us](#)
[Privacy Policy](#)

# Ramsay Distributors

[Home](#)
[About Us](#)
[Contact Us](#)
[Privacy Policy](#)

## How to Order

1. Visit our website, select your product, and click on the product information link to view the details. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

2. Add the product to your cart. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

3. Click on the "Checkout" button. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

4. Enter your shipping and billing information. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

5. Click on the "Place Order" button. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

6. You will receive an email confirmation of your order. You will be able to see the product details, including the product name, price, and availability. You will also be able to see the product details, including the product name, price, and availability.

## Our Products

We offer a wide range of products, including:

- Books**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Children's Books](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- CDs**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classical](#)
  - [Jazz](#)
  - [Pop](#)
  - [Rock](#)
  - [Soundtracks](#)
- DVDs**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classical](#)
  - [Jazz](#)
  - [Pop](#)
  - [Rock](#)
  - [Soundtracks](#)
- Video**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classical](#)
  - [Jazz](#)
  - [Pop](#)
  - [Rock](#)
  - [Soundtracks](#)

## Our Services

We offer a wide range of services, including:

- Online Catalog**
  - [Browse by Category](#)
  - [Search by Keyword](#)
  - [Advanced Search](#)
  - [Product Details](#)
  - [Add to Cart](#)
  - [Checkout](#)
  - [Order Confirmation](#)
  - [Shipping Information](#)
  - [Return Policy](#)
  - [Contact Us](#)
- Physical Store**
  - [Browse by Category](#)
  - [Search by Keyword](#)
  - [Advanced Search](#)
  - [Product Details](#)
  - [Add to Cart](#)
  - [Checkout](#)
  - [Order Confirmation](#)
  - [Shipping Information](#)
  - [Return Policy](#)
  - [Contact Us](#)

## Our Locations

We have a wide range of locations, including:

- New York**
  - [Manhattan](#)
  - [Brooklyn](#)
  - [Queens](#)
  - [Riverside](#)
  - [Westchester](#)
- Los Angeles**
  - [Downtown](#)
  - [Beverly Hills](#)
  - [Santa Monica](#)
  - [Malibu](#)
  - [Pasadena](#)
- Chicago**
  - [Downtown](#)
  - [North Branch](#)
  - [South Branch](#)
  - [West Branch](#)
  - [East Branch](#)
- San Francisco**
  - [Downtown](#)
  - [North Branch](#)
  - [South Branch](#)
  - [West Branch](#)
  - [East Branch](#)

## Our Partners

We have a wide range of partners, including:

- Authors**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Producers**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Distributors**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Booksellers**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)

## Our History

We have a long and rich history, including:

- Founding**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Growth**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Innovation**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Expansion**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)

## Our Future

We have a bright future, including:

- Growth**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Innovation**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Expansion**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)
- Success**
  - [New Arrivals](#)
  - [Best Sellers](#)
  - [Classics](#)
  - [Fiction](#)
  - [Non-Fiction](#)
  - [Reference](#)
  - [Textbooks](#)

## Dealer Information

**Find a Dealer Near YOU!**

[illegible]

**WIN Every Month!**  
**Register To WIN!**

The screenshot shows the Ramsey Business website. At the top, there's a navigation bar with the Ramsey logo and a list of services: ACCOUNTING, TAX, FINANCIAL, and BUSINESS. Below this is a section titled "SERVICES FOR SMALL BUSINESSES" with a sub-header "Manuals". The main content area lists various services with descriptions and links to manuals. On the right side, there's a sidebar with a search bar and a list of categories: ACCOUNTING, TAX, FINANCIAL, and BUSINESS.

Service	Manual	Download	Print	Share	More
ACCOUNTING	ACCOUNTING	Download	Print	Share	More
TAX	TAX	Download	Print	Share	More
FINANCIAL	FINANCIAL	Download	Print	Share	More
BUSINESS	BUSINESS	Download	Print	Share	More

## Downloads!

### Kit Manuals. Software... More!

***www.ramseykits.com***







# Welcome to the Hobby Kit world of Ramsey Electronics®...

## ★ About Us!

Ramsey Electronics® was started in the early 70's as a hobby kit business. It is the core value of the company from that day going forward to provide the electronic hobbyist, young or old, an experience of achievement, by not only building a neat electronic product, but understanding the theory behind it, including the how's and why's of the entire circuit. From the very first kit, our goal was **Build It, Learn It, Achieve It, and Enjoy It!** We must be doing it right, because we're in our 4th decade of providing some of the greatest hobbyist experiences to our customers. And with that we bring you our latest Hobby Kit catalog! As always, all of our Ramsey brand kits are designed, created, built, tested, and packaged right here, in Victor NY, USA! We are also pleased to bring you a great assortment of electronic kits and products from our partner suppliers.

## ★ Friendly Dedicated People!

Our friendly Hobby Kit staff is just like you, interested in neat electronic products! From the CSR's that take your order to the shipping personnel who confirm it, they are dedicated to one thing... your satisfaction!

## ★ Easy Ordering!



Ordering from Ramsey is easy, and you've got plenty of options! Order safely and securely 24/7 online at [www.ramseykits.com](http://www.ramseykits.com), or use our stores on eBay or Amazon. Offline, you can call our friendly CSR's toll free and they will answer any questions you may have and quickly guide you through your order. You will also find a convenient mail-in order form in this catalog. All major credit cards, PayPal, checks and wire transfers are accepted. Open accounts are also extended to suitably rated firms and organizations as well as government, municipal, and educational agencies and institutions.



## ★ Incredible Tech Support!

We consider our Hobby Kit Technical Support Group to be second to none! That's a pretty strong statement, but we have 41 years of satisfied customers to back it up! We feel that buying and building an electronic kit is merely the beginning. We back you up until that final moment when you turn it on and you see the incredible results of your handiwork! Our Tech Support Group handles it all: parts questions, assembly questions, theory questions, schematic questions, troubleshooting problems, plus repair and return procedures. Whether it's a phone call to verify the hookup or an email about a part's value, they are there for you. You will also find a host of resources at [www.ramseykits.com](http://www.ramseykits.com) to assist you with questions. The user forums on our site are another great place to get help and discuss products and applications with fellow Ramsey customers. In addition to our site you can also follow us on:



## ★ Risk Free Return Policy!

Not sure a Ramsey kit or product is exactly what you are looking for? No problem! Order it and examine it (but don't build it if it's a kit!) for up to 10 days. If it's not exactly what you expected, return it for a full refund, no questions asked! Curious about the assembly of a product prior to building it? Got you covered there also; all manuals can be downloaded at [www.ramseykits.com](http://www.ramseykits.com)! (Valid for Ramsey Hobby Kit products only)

**Did You Know?**



**We're a lot more than just Hobby Kits!**

### Professional RF Shielded Test Enclosure Division

We are one of the largest manufacturers of RF Shielded Test Enclosures for the cellular and wireless LAN industry in the world! Our patented enclosures are used worldwide for isolated testing of 802.11a,b,g,n devices, cellular, PCS, GSM, 3G, 4G, LTE, Wi-Fi, Wilbree, ZigBee, Bluetooth, RFID, and a host of other wireless voice and data formats! For additional information visit [www.ramseytest.com](http://www.ramseytest.com) or call us at 800-446-2295.



### Government & Military Products Division

For years, Ramsey Electronics® has been a leading provider of FM and LPFM broadcast transmitters with our PX series. More than a decade ago we innovated the Radio In a Box complete broadcast station. Today, with more than 25 RIAB models designed exclusively for government and military deployment, our systems are considered the standard. Government and military personnel may visit [www.ramseygov.com](http://www.ramseygov.com) for information.

<b>AM/FM Broadcasters</b>	<b>4-7</b>
<b>Digital Clocks</b>	<b>8-10</b>
<b>LED Displays</b>	<b>11-13</b>
<b>LED Brain Games</b>	<b>14</b>
<b>Lighting Effects</b>	<b>15-16</b>
<b>DMX Control</b>	<b>17</b>
<b>Sound Effects</b>	<b>18-19</b>
<b>Audio Amps &amp; Accys</b>	<b>20-26</b>
<b>Fun Stuff</b>	<b>27-29</b>
<b>Seasonal Displays</b>	<b>30-31</b>
<b>Sensors &amp; Alarms</b>	<b>32-35</b>
<b>Controls &amp; Timers</b>	<b>36-44</b>
<b>Data Control</b>	<b>45</b>
<b>Telephone Accys</b>	<b>46</b>
<b>Receivers</b>	<b>47-49</b>
<b>Amateur Radio Gear</b>	<b>50-52</b>
<b>Power Supplies</b>	<b>53</b>
<b>Antennas &amp; Accys</b>	<b>54-55</b>
<b>Learning &amp; Educational</b>	<b>56-62</b>
<b>Video Cameras &amp; Accys</b>	<b>63</b>
<b>Automotive</b>	<b>64-65</b>
<b>Test Equipment</b>	<b>66-71</b>
<b>Power Adapters</b>	<b>72</b>
<b>Tools &amp; Accessories</b>	<b>73-74</b>
<b>Soldering Guide</b>	<b>75</b>
<b>Broadcast FM</b>	<b>76</b>
<b>RF Test Enclosures</b>	<b>77</b>
<b>Index</b>	<b>78-79</b>



Look for the QR Code tag like this throughout the catalog. Use the Tag App in your smartphone to automatically get more information directly from our website! (but you knew that!)



**RAMSEY ELECTRONICS®**  
590 Fishers Station Drive  
Victor, New York 14564  
Phone (585) 924-4560  
[www.ramseykits.com](http://www.ramseykits.com)





## Digital Controlled FM Stereo Transmitters

- ✓ PLL synthesized for drift free operation
- ✓ Front panel digital control and display of all settings and parameters!
- ✓ Professional metal case for noise-free operation
- ✓ EMI filtering on audio and power inputs
- ✓ Super audio quality, rivals commercial broadcasts
- ✓ Available in domestic kit or factory assembled export versions

**All The Features You Asked For...  
PLUS A WHOLE LOT MORE!**

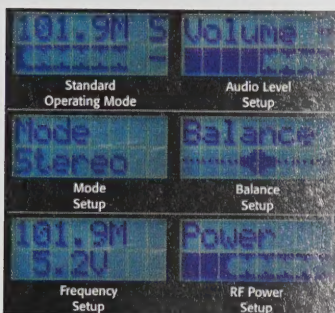
### THE LEGACY CONTINUES!

For more than a decade we have been the leader in hobbyist FM radio transmitters. First we came out with our low cost FM10, the tunable FM transmitter that has set records as the most popular school, scouting, and first time hobbyist kit.

Then we introduced the world famous FM25 series of FM transmitters. We took the basic concept of the tunable FM10, made it synthesized for rock solid and stable operation, and gave it the features and performance that made it THE LEADER in low cost FM stereo transmitters. From there we introduced our FM100 series Super Pro FM Stereo Radio Station which became the "gold standard" for professional installations around the world.

### NOW THE BEST OF BOTH WORLDS!

How could we make history better? First, we listened to thousands of our customers who loved the stability of the PLL synthesized FM25 series but wanted easy to change front panel control of the operating frequency and wanted to know what frequency they were transmitting on. They also wanted the capability of controlling the audio levels at the transmitter rather than changing the input levels.



We thought those were very legitimate requests, and our response was to recommend they use the FM100 series. "But I don't need an audio mixer, I don't need all that fancy stuff built-in, I just need a small transmitter I can afford!" Well here you go, designed from the ground up... the FM30 series!

Our RF engineers took it as a challenge and designed not one, but TWO transmitters! The FM30B is designed using through-hole technology and components and is available only as a do-it-yourself kit, with a 25mW output very similar to our FM25 series.

Then they re-engineered their brand-new design using surface mount technology (SMT) for a very special factory assembled and tested FM35BWT version, with 1W output specifically and solely for our export market! Both are designed around an RF tight vinyl clad metal enclosure for noise and interference free operation.

All settings can be changed without taking the cover off! Enter the setup mode from the front panel and step through the menu to make all of your adjustments. A two line LCD display shows you all the settings! In addition to the LCD display, a front panel LED indicates PLL lock so you know you are transmitting. Besides frequency selection, front panel control and display gives you 256 steps of audio volume (left and right combined) as well as RF output power. A separate balance setting compensates for left/right differences in audio level. In addition to settings, the LCD display shows you "Quality of Signal" to help you set your levels for optimum sound quality. And of course, all settings are stored in non-volatile memory for future use!

The design includes EMI filters on line level audio and power inputs and a state of the art microstrip PCB inductor to reduce microphonics for the ultimate in alignment free operation. RF output is brought out to a professional, well shielded rear panel BNC connector for a perfect antenna match. Standard RCA connectors are used for left and right line level audio inputs. Both the FM30B and FM35BWT operate on 13.8 to 16VDC and include a 15VDC plug in power supply.

The stylish black metal case measures 5.55"W x 6.45"D x 1.5"H. If you're looking for a super performer but don't need the extra features of our FM100B series transmitters, the FM30B is for you! (Note: The FM30B is a do-it-yourself learning kit that you assemble. The end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body. FM35BWT is for export use and can only be shipped to locations outside the continental US or valid APO/FPO addresses or valid customs brokers for documented end delivery outside the continental US).

FM30B

FM35BWT

Digital Synthesized FM Stereo Transmitter Kit, 0-25mW RF Output

Digital Synthesized FM Stereo Transmitter, 0-1W RF Output, Assembled & Tested, Export Only

Wired & Tested



## Handheld Digital Stereo Recorder

- ✓ Stereo X/Y mic configuration captures perfect stereo images!
- ✓ Records Broadcast WAV (BWF) at 96kHz/48kHz/44.1kHz at 16-bit or 24-bit!
- ✓ Records MP3 from 48 to 320kbps for maximum recording time!
- ✓ Hi-Speed USB 2.0 port and built-in reference speaker!
- ✓ One AA size battery allows 10 hours operation!
- ✓ Accommodates up to 32GB microSDHC memory cards!
- ✓ 1/8-inch external mic input and stereo line output!

**The Handiest Broadcasting  
Companion You Can Have!**



The New H1 portable stereo recorder is one of the most portable and easy to use recording devices to date. But don't let its size fool you, the on-board studio quality microphones delivers flawless recordings every time. Team up the H1 with any of your Ramsey broadcasters and you have the ultimate means to record live events for broadcast! The incredible built-in microphones make anything from a local concert in the park, to a full dress philharmonic concert sound perfect. Setup is easy... there isn't any! Just find a suitable centrally located spot to set the recorder, make sure you have space on the microSD card, and push the record button! You can also monitor the audio with your headphones, ear buds, or the built-in reference speaker. It doesn't get much easier than that. Playback to any Ramsey broadcaster is simple with a standard stereo cable directly to your transmitter or mixer.

H1's onboard microphones are configured in an X/Y pattern, for stunning stereo imaging. The user interface is simple and perfect for both the novice and the professional. All its functions are at your fingertips, such as track marker, auto record, low cut filter, level and volume controls with on-board buttons... No menus required! No matter what recording format you need, this little beauty has it covered from 16-bit/44.1 kHz to 24-bit/96 kHz WAV, or MP3 from 48 kbps to 320 kbps with enough tools onboard to make impeccable recordings. The recorder comes with a 2GB microSD card, and it is compatible up to a whopping 32GB microSDHC card that allows over 50 hours of recording time at 16-bit/44.1 kHz. That's a lot of recording time! Everything you need is included. Order the H1 accessory pack that includes a windscreen, AC adapter, USB cable, tripod, and padded case.

H1  
APH1 Handheld Digital Audio Recorder, Factory Assembled & Tested  
H1 Accessory Pack

Call For Current Ramsey Sale Price!  
Call For Current Ramsey Sale Price!



\$199.95

\$299.95





Wired & Tested  
(Export Only)

## Super-Pro Synthesized FM Stereo Radio Station

- ✓ Built-in mixer - 2 line inputs and one microphone input, line level monitor output!
- ✓ Frequency range 88.0 to 108.0, 100 kHz steps
- ✓ Precision active low-pass "brick wall" audio filter!
- ✓ Clean, filtered RF output suitable for RF amplification
- ✓ Dual LED bar graph audio level meters!
- ✓ Automatic adjustable microphone ducking!

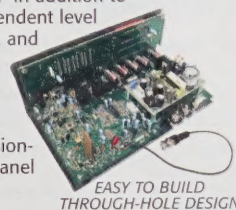
*The Complete Station...  
Continues To Be The  
Leader Worldwide!*

The true professional workhorse of our FM Stereo transmitter line, the FM100B has become the transmitter of choice for both amateurs and professionals around the world. From the serious hobbyist to churches, drive-in theaters, colleges and schools, it continues to be the leader. Not just a transmitter, the FM100B is a fully functional radio station and provides everything but the audio input and antenna system! Just add that and you're on the air!

This professional synthesized transmitter is adjustable directly from the front panel with a large LED digital readout of the operating frequency. Just enter the setup mode and set your frequency. Once selected and locked you are assured of a rock stable carrier with zero drift. The power output is continuously adjustable throughout the power range of the model selected. In addition, a new layer of anti-static protection for the final RF amplifier stage and audio inputs has been added to protect you from sudden static and power surges. If you're looking for a "soup to nuts" solution for your micro broadcasting station, the FM100B is it!



Audio quality is equally impressive. A precision active low-pass brick wall audio filter and peak level limiters give your signal maximum "punch" while preventing overmodulation. Two sets of rear panel stereo line level inputs are provided with front panel level control for both. Standard unbalanced "RCA" line inputs are used to make it simple to connect to the audio output of your computer, MP3 player, smartphone, CD player, deck or any other consumer audio source. Get even more creative and record and air your own "live remotes" such as concerts and meetings with the H1 portable stereo recorder on page 4. In addition to the line level inputs, there is a separate front panel microphone input. All three inputs have independent level controls eliminating the need for separate audio mixer! Just pot-up the source control when ready, and cross fade to the 2nd line input or mic! It's that simple! In addition to the dual stereo line inputs, a stereo monitor output is provided. This is perfect to drive studio monitors or local in-house PA systems.



EASY TO BUILD  
THROUGH-HOLE DESIGN

Not enough? How about unattended microphone ducking! When enabled, the presence of mic audio automatically reduces and overrides the line level input! If you have music playing from one of the line inputs, just start talking into the mic and the cross fading is done automatically! Just like the professional units at a fraction of the cost. To provide a perfect match to any microphone you may use, a new highly responsive mic AGC circuit along with a front panel mic duck sensitivity control is also provided. This allows you to customize line muting to your exact needs!

The FM100B series includes an attractive metal case, whip antenna and built in 110/220VAC power supply. A BNC connector is also provided for an external antenna. Check out our Tru-Match FM antenna kit, for the perfect mate to the FM100B transmitter. We also offer a high power kit as well as an export-only assembled version that provides a variable RF output power up to 1 watt. The 1 watt unit must utilize an external antenna properly matched to the operating frequency to maintain a proper VSWR to protect the transmitter. (Note: The FM100B and FM100BEX are do-it-yourself learning kits that you assemble. The end user is responsible for complying with all FCC rules & regulations within the US or any regulations of their respective governing body. The FM100BWT is for export use and can only be shipped to locations outside the continental US, valid APO/FPO addresses or valid customs brokers for documented end delivery outside the continental US).



FM100B	Super-Pro FM Stereo Radio Station Kit, 5uW to 25 mW Output	\$269.95
FM100BEX	Super-Pro High Power Kit, 5uW to 1Watt Output	\$349.95
FM100BWT	Factory Assembled & Tested FM100BEX, 5uW to 1 Watt Output, Export Only	\$429.95

## Stereo Audio Platform Gain Controller

KIT

- ✓ Stereo audio processing while preserving audio dynamics!
- ✓ True stereo control keeps virtual sonic source location intact!
- ✓ Automatic set-and-forget operation!
- ✓ Auto-bypass restores original levels when power is turned off!
- ✓ Unbalanced RCA and 3.5mm stereo input and output line level jacks!
- ✓ Built-in bar graph indication of signal level with display mute!

*Your Full-Time Audio Engineer...  
Without the Payroll!*



The SGC1 is one of our latest kits, and provides a great solution to the age-old problem: how can we easily correct inconsistent audio levels without negatively affecting the dynamics of the audio signal? To fully understand that statement, let's look at a few examples: Say you've recorded a live event, whether it be a concert, meeting, or even a family gathering, you have certainly found your recording contains a wide range of audio levels, from the overbearing drums close to the recorder to the faint whisper of a flute across the stage. Likewise, broadcasting a live "town hall" meeting, where some of the participants can be heard just fine while others are barely audible. Or how about an example everyone is familiar with: when television commercials come on, they are often a lot louder than the program you were just watching! So how does the SGC1 solve this problem? Read on!

The SGC1 circuit implements a principle known as the "Platform Gain Principle," which was originally developed by CBS Labs (what we now know as CBS in the TV and radio world) to allow transmitted audio levels to be automatically adjusted to keep them within a desired range. Think of it like an audio engineer, constantly adjusting the output level in order to limit highs that would be too loud while boosting lower levels so that they can still be heard. You may think "oh, this is just another limiter/compressor!" Not so! Here's the real trick: keeping the full dynamic range ratio of the output signal the same as the original input - something the typical limiter/compressor can only dream of doing! The SGC1 can be placed in just about any standard analog stereo line level audio circuit (the red and white RCA connectors or the mini-phone connector) to keep the audio level within the desired range. It's also the perfect addition to any of our hobby kit transmitters, allowing you to match levels between different audio sources while keeping lows audible and preventing the highs from overdriving. The SGC1 makes a great addition to any audio system where you need to keep levels from different sources under control, but still make sure they all sound great!

In addition to its useful basic function and great audio performance, the SGC1 also boasts a front panel LED meter to give an indication of the relative level of the input signal, plus a level control (also on the front panel) that allows you to adjust the controller to the min/max center point of your desired level range. And yes, it is a Stereo Gain Controller! Meaning that the levels of both the left and right channels are monitored and adjusted equally, thereby maintaining the relative virtual position of things like instruments, singers and speakers! When powered down the controller is automatically bypassed, and will simply pass through the unchanged original audio, meaning no messing around with cables required if you simply want to cut it out of the equation temporarily. There's even a front panel switch to disable the LED display - perfect for situations where light can be distracting - like a darkened home-theatre! The entire unit is housed in a slim attractive black textured aluminum case that is sure to complement your studio or home theatre. If you're looking for perfect audio levels, hire a broadcast audio engineer, but if that doesn't fit your budget, the SGC1 is the next best thing! Includes 15VDC world-wide power adapter.





KIT

**Includes Pre-Installed  
SMT Components!**

Designed to be the heart of a basic FM transmitting system makes the FM25B a solid performer and very economical to build and operate. Just plug in the audio from your MP3 player, CD player, DVD, computer, tape deck, VCR or even a TV and broadcast it on any frequency in the standard FM broadcast band. The sound quality and stereo separation of this little transmitter will keep the pickiest audiophile happy. This unit has many uses! Broadcast your favorite music around your house and yard. Use it to play DJ for your friends. Farmers, broadcast to your tractors in the fields. Used in conjunction with the H1 portable recorder makes it easy to broadcast your live recorded events! Broadcast school events to parents picking up their children from school. Broadcast important messages to a small community. The applications for this kit are limited only by your imagination!

The FM25B brings stereo line level audio into the unit through a 3.5mm stereo phone jack. A loop out is provided at the input for monitoring. The unit features a PIC microprocessor for easy frequency programming through board mounted DIP switches. The PLL is adjustable from 5uW to 25 mW via a potentiometer. Use the built-in whip antenna or use an external antenna with the standard "F" external antenna connector on the rear panel. Just plug it in and you're on the air. The unit requires 12 VDC @ 100mA to operate. Kit comes with: matching case set, whip antenna, 110VAC power adapter, and audio patch cable. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The FM25B is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FM25B).

**FM25B Professional Synthesized FM Stereo Transmitter Kit, adjustable 5 uW to 25 mW Output**

**\$139.95**

## Tunable FM Stereo Transmitter



- ✓ Tunable anywhere in standard FM band... 88 to 108 MHz!
- ✓ Operates on 5 to 20VDC
- ✓ Settable pre-emphasis 50 or 75 µSec for use anywhere in the world!
- ✓ Easy to build, low cost transmitter includes matching case set!

Here is a great entry-level kit that will teach the basics of FM Broadcast transmission while finding many uses around the home or dorm room. The FM10C has plenty of power to cover your home, backyard, or city block. Our manual goes into great detail outlining all the aspects of antennas, transmitting range and FCC rules and regulations.

You'll be amazed at the exceptional audio quality of the FM10C. Tunes through the entire 88-108MHz band in three separate ranges with a tuned LC circuit. Re-broadcast your favorite music commercial-free with the dynamic range the musician intended, and without all that nasty compression the big boys use to make their station sound louder than the competition. Runs on a standard 9V battery (not included), external power from 5 to 20 VDC, or an optional 120 VAC adapter. Includes the matching case & knob set for a professional finished look. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The FM10C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FM10C).

**FM10C FM Stereo Transmitter Kit With Case**  
**AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$47.95**

**\$9.95**



**Be As Stable  
As A Rock!**

## Professional Synthesized AM Transmitter

- ✓ Fully synthesized, no frequency drift!
- ✓ Ideal for schools
- ✓ Microprocessor controlled!
- ✓ Strappable for higher power output where regulations permit
- ✓ Includes AC power adapter and case set

The AM25 is not your ordinary hobbyist AM transmitter! The AM broadcast band is quite alive and well, and is still considered the home of talk radio. For years the AM band has been a popular place for community broadcasts, in-home broadcasts, and other local information broadcasts. Now you can have a professional synthesized AM transmitter at the cost of a hobby unit!

The AM25 operates anywhere within the standard AM broadcast band, and is easily set to any clear channel in your area. The design is similar to that of a commercial radio transmitter, so while you build it you'll learn how the "big guys" operate. It is widely used by schools - standard output is 100mW with range up to 1/4 mile and is jumper settable for higher output where regulations allow. There is no tuning or tweaking involved with the AM25. The PLL synthesized frequency is easily set with dip-switches and is rock solid without any drift, just like our FM25B. This is critical for any digital radio or tuner. The transmitter accepts line level input from any audio source including CD players, tape decks, computers, etc. Includes matching case & knob set and 110VAC power supply. Case measures 5"W x 1 1/2"H x 5 1/4"D. (Note: The AM25B is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the AM25).

**AM25 Professional AM Synthesized AM Transmitter Kit, Case, and AC Power Supply**

**\$99.95**

## Tunable AM Radio Transmitter



- ✓ Tunes entire 550 to 1600 KHz AM band
- ✓ Operates on 9 to 12 VDC, includes case set
- ✓ Standard line level input with RCA phono jack
- ✓ 100 mW output. Range up to 1/4 mile under optimum conditions

**#1 Scouting Project  
For Years**

The AM1 is a great first kit and a fine low power AM broadcaster for the hobbyist on a budget. It's a great way to learn the basics of AM broadcast technology, not to mention basic soldering and component identification (if you're a beginner!). The transmitter can be tuned to broadcast anywhere in the AM band (550 to 1600 kHz).

Setting frequency is simple - tune a nearby AM radio to the desired frequency, then adjust the AM1 coil to match the radio. With 100 mW of output power, range can be up to 1/4 mile. Connect any line level audio source from your CD player, tape deck, or mic mixer to the RCA input on the rear panel of the AM1C and you'll be on the air. It's that simple! The AM1 has been used by Scout camps, churches, schools, and other organizations to provide easy, low cost communications. Includes the matching case and knob set shown. Measures 5"W x 1 1/2"H x 5 1/4"D. (Note: The AM1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the AM1C).

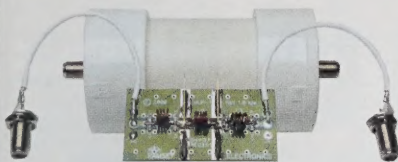
**AM1C AM Radio Transmitter Kit With Case**  
**AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$34.95**

**\$9.95**







KIT

Wired & Tested

## External FM Broadcast Low Pass Filter

*"Clean Up" Your  
FM Broadcasts!*

- ✓ Clean up the output of a low quality FM exciter
- ✓ Designed around our FCC Certified LPFM transmitters
- ✓ Easy to put in line with your transmitter
- ✓ Includes outdoor PVC housing!

The FM Low Pass Filter kit came about while designing the PX1 and the PX50 Professional FM Transmitter. FCC Ruling 99-25 created a class of radio stations designed to serve local communities by authorizing new classes of non-commercial, low power FM radio services (LPFM). In order to meet the stringent guidelines of the FCC, the PX1 and PX50 underwent months of design sessions and many hours of painstaking tests.

One of the secrets to its clean output is the FMLP1. If you own one of those spectrally dirty "import" exciters you'll definitely want to add the FMLP1 to clean up the output and properly match your power amplifier. Maximum input power is 50 watts. The kit utilizes surface mount chip caps, so you'll need ultra fine solder and a magnifying lamp! Includes outdoor PVC housing shown above.

FMLP1 FM Low Pass Filter Kit  
FMLP1WT FM Low Pass Filter, Factory Assembled and Tested

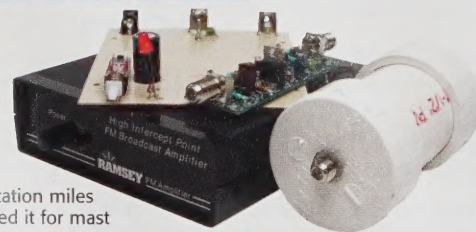
\$29.95  
\$49.95

## High Intercept Point FM Broadcast Amplifier

- ✓ Virtually overload proof
- ✓ Mast mount for best performance and signal to noise ratio
- ✓ Put your power at the antenna not in the feedline
- ✓ Very well filtered with 5 sections of low pass filtering
- ✓ Includes outdoor PVC housing!

TOP  
SELLER!

*Amplify BEFORE  
The Line Loss!*



Discover the 1st rule of amplifiers... do it BEFORE the noise! We developed this amplifier to receive a low power college FM station miles away while we had a nearby 50kw AM station. Standard preamps were simply overloaded. We took our LPA1C and redesigned it for mast mounting, sending power up the coax. Wow, did it work!

As an experiment, we tried using it to boost one of our FM transmitters for a customer overseas. We couldn't believe the increase in transmission range, and the lowpass filtering made us feel pretty good about not futzing up anyone else's reception! Naturally, this is a no-no in the USA, but great for the export markets that allow such equipment. Includes the outdoor PVC enclosure and the matching black case & knob set. (Note: The FMBA1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the FMBA1C).

FMBA1C High Intercept Point FM Amplifier Kit With Case  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$74.95  
\$9.95



KIT

*Our Famous Broadband  
RF Amplifier!*

TOP  
SELLER!

## RF Broadband Power Amplifier

- ✓ Up to one watt RF power output!
- ✓ Broadband range 300KHz to 1000 MHz!
- ✓ Runs on 12-15 VDC

The LPA1 is the ticket for boosting power up to 1 watt over a frequency range of 300 KHz to over 1000 MHz! It is perfect for use as a broadband amplifier for test equipment to amplify low level signal input. It has been one of the most popular lab amplifiers for years! In addition, many users in foreign countries outside the US use the LPA1 to boost their low power FM stereo transmitters to a watt of power capable of providing radio service through an entire town. This application is limited to international areas not under the jurisdiction of the FCC or other similar agencies limiting the power output of your transmitter. Power required is 12 to 15 volts DC at 250 mA via 2.1mm male power jack. Gain of 38 dB at 10 MHz, 10 dB at 1000 MHz. Includes the custom matching case & knob set for a neat, professionally finished look. Case size 5"W x 1 1/2"H x 5 1/4"D. (Note: The LPA1C is a do-it-yourself learning kit that you assemble. Please remember that the end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the LPA1C).

LPA1C RF Linear Power Amplifier Kit With Case  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$54.95  
\$9.95

## Tru-Match FM Broadcast Antenna

*Rugged PVC Construction...  
Keeps The Weather Out!*

KIT

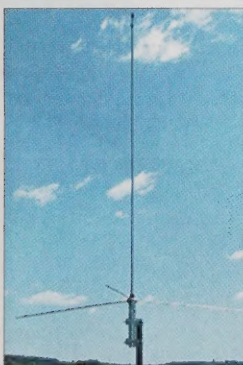
- ✓ Fully weatherproof - rugged PVC construction
- ✓ Matches 50 or 75 ohm systems!
- ✓ Broadband for perfect match!

Looking for a perfect low cost FM antenna? Our extremely popular TM100 Tru-Mach antenna will fit the bill! Matching your antenna to your transmitter is the single most important link in your transmitter setup. Without a proper match, power is reflected away from the antenna and back into the transmitter! This can cause the final amplifier stage to be damaged, not to mention spurious signals and (no better way to say it!) lousy range.

The unique design features PVC tubes and fittings to make it waterproof and impervious to rain and snow, which make the TM100 one of the most reliable antennas available for the private broadcaster! Unlike other FM transmitter antennas that need to be tuned to a specific frequency, the TM100 is broadband over the entire 88-108MHz band yet still maintains an excellent match! The antenna terminates with a standard "F" connector for easy connection with standard 75 ohm TV coax to your FM10C or FM25B. See our connectors section to adapt the "F" connector to a "BNC" for easy matching of professional 50 ohm coax or 75 ohm TV coax for use with our FM30 or FM100B series transmitters. Maximum power rating of the TM100 is 25 watts. BTW, also makes a GREAT and easy-to-connect omnidirectional receiver antenna!

TM100 FM Broadcast Low Power Antenna Kit (25W Max)

\$69.95



TOP  
SELLER!

*New Version For Even Greater  
Performance!*

## 5/8 Wave Collinear Vertical FM Antenna

- ✓ 5/8 wave for excellent gain and maximum range
- ✓ Field adjustable for a perfect match
- ✓ 3.4 dB gain effectively doubles your power!

The FMA200 antenna has been our most popular FM broadcast antenna... now it's even better, with the new revised model! The proven omnidirectional ground plane 5/8 wave design keeps your signal low to the horizon and not uselessly radiating up into space - great if your listeners are out in space but the pits for the folks out at the edge of town! Imagine a donut shaped pattern of signal radiating from your antenna. For the most range out to the horizon, we need to "squish" that pattern flatter to squeeze more signal out - and that's exactly what this antenna does! And now the FMA200E has increased power handling capacity to 300 watts, and includes a complete tool kit to make installation a breeze!

The antenna is easy to assemble and is adjustable to your specific frequency during assembly. Makes a super match and a perfect VSWR to your transmitter! The base of the antenna mounts on any standard antenna mast or pipe (not included). A professional SO-239 connector is provided at the base of the antenna to match a standard PL-259 connector. Height: 7' 7", 300 watt power rating. Visit [www.ramseyelectronics.com](http://www.ramseyelectronics.com) for matching coax cable assemblies to match up to your transmitter.

FMA200E 5/8 Wave Collinear Antenna, 300 Watt RF Power Rating

\$139.95





## Classic Nixie Tube Clocks

KIT

Wired &amp; Tested

- ✓ Our brand-new next generation clock for 2013!
- ✓ Large bright orange Nixie tube display!
- ✓ Today's latest technology with yesterday's display!
- ✓ Choice of hand rubbed Teak/Maple, polished aluminum, or acrylic base!
- ✓ Choice of IN-14 or IN-8-2 quick replace tubes
- ✓ Quartz crystal timebase!
- ✓ Low-cost GPS receiver timebase option!
- ✓ Programmable 729 color LED tube mood lighting!
- ✓ Programmable date display!
- ✓ Programmable alarm with snooze!
- ✓ The ultimate conversation piece!
- ✓ And a whole lot more!

*It's Time To Go Back In Time...  
With Time!*

### THE HISTORY

The Nixie tube made its debut in 1954 by Burroughs Corporation and quickly found its way as a digital display in high end test equipment, frequency counters, military applications and research projects. Soon they were used as the very first electronic digital display in consumer products like calculators, and the very first digital clocks. For those that were there, who couldn't forget that warm golden glow of actual formed numbers one through zero changing before your eyes!

The tubes were and still are a marvel in themselves! While resembling a standard vacuum tube, they had ten separate cold cathodes precisely formed into the shape of the ten numerical digits, stacked one on top another! Filled with neon gas, each digit would emit a characteristic and appealing soft orange glow when 170 VDC was applied between its respective cathode and its wire mesh anode. Even though they were tubes, their cold cathode design did not generate the heat normally associated with standard heated cathode tubes. The name "Nixie" was derived by Burroughs from "NIX I", an abbreviation of "Numeric Indicator eXperimental No. 1". Hundreds of Nixie tubes with size and display variations were manufactured during their lifespan.

In 1970, the RCA introduced the Numitron tube with incandescent filaments arranged into a new seven segment styled display that emulated the numbers one through zero with various combinations of the seven illuminated incandescent filaments. While not perfectly rounded and formed digits, the straight segments of the Numitron seven segment display became the standard for all future numerical displays including the vacuum fluorescent display (VFD), LED, and LCD seven segment displays.

In the early 70's the Nixie tube was replaced by these newer technologies because they did not require the complex cathode structure, provided higher resolution graphics, were smaller and less fragile, and did not require high voltage to drive them. LED displays quickly became the standard display for all digital display products. Subminiature versions even found their way into the early Pulsar wristwatches (although Steve Wozniak did have a Nixie wristwatch!)

Ironically, Ramsey Electronics® started up in the early 70's and one of our first products was a neat and very high tech 7 segment LED clock kit in a nice extruded aluminum housing. It became extremely popular and we became famous for bringing state-of-the-art IC driven LED display technology to the hobbyist! Now, more than four decades later, we are proud to build not only a piece of history, but a piece of Ramsey history back to the hobbyist... The Nixie Tube Digital Clocks!

### RETRO WITH A TWIST!

Designed to pay homage to the era which birthed the Nixie, these clocks won't pick up radio stations, won't dock your iPod, and certainly won't play CDs. But what they will do is display the time, beautifully and simply, like no other clock today can! Once utilized for military and high-end test equipment, Nixies are now prized for their modern aesthetics. The warm neon glow of a Nixie clock adds a cool retro touch to any office, home or work area. But hidden beneath those beautiful tubes from the 50's is some of the latest technology providing you some of the neatest features available in a clock today. You truly have the best of both worlds... or both eras!

### YOUR CHOICE OF APPEARANCE!

We can take you back in time to the 60's and 70's with that unforgettable classic warm glow of Nixie tubes but the trip wouldn't be complete without your choice of a custom matching base. Back in the late 60's remember when radios, TVs, and other devices were all supplied in furniture quality wood cabinets? From the old floor model AM radio to the latest console TV, there was no veneer or composite materials to be found! Keeping with that era you can choose a solid two tone teak and maple clock base for your clock! Made out of fine hardwoods, these are hand crafted and hand rubbed to a furniture quality satin finish. The teak maple base has become our signature base for our Nixie clocks. IN-14 tubes shown with upside down "2" as the "5"!

Continuing the look-back in time, in the early 70's shiny metal and chrome became the "in-thing". From metal radio and TV cabinets with shiny bright trim to vinyl covered furniture with plated steel legs, to the chrome blender and toaster in your kitchen. If that is your "look", the custom polished aluminum base is for you! This base is crafted from one piece of solid aluminum, milled to precision and polished to a mirror finish. The warm glow of the Nixie tubes along with the LED mood lighting will nicely reflect across the surface of the clock. IN-8-2 tubes shown.

Finally, if you really want to mix the authentic "golden age" with futuristic technology, and are proud to display it, then our clear see-through acrylic base is for you! Not only will you see the Nixie tube display but you, your friends, and family will see the inner workings of the clock! If you've ever owned an Accutron Spaceview watch, you will remember how neat it was seeing the tuning forks and little miniature parts inside. With the see-through base you will see everything from the microprocessor to the LED indicators. Plus, the glow from the color LED mood lighting will reflect throughout the case creating a great display as well as an incredible conversation starter! Whether it be the fine hardwoods of teak and maple or the futuristic see-through base, your clock will be a proud addition to your home or office. IN-8-2 tubes shown.

### YOUR CHOICE OF TUBES!

Since their "demise", Nixie tubes haven't been manufactured domestically for decades. However they were still being manufactured in high volume in the mid 80's in the former Soviet Union at the Reflector factory in Saratov City. While no longer manufactured, it is still possible to find them as "new old stock" (NOS) from Russian parts warehouses if you are "in the know"! We give you the choice of two very different Nixie tubes for your clock... read on!

#### IN-14 Nixie Tubes

New old stock tubes, with a digit height of .7", an overall tube diameter of .75", and an overall tube height of 2". These tubes provide the classic soft glow of the original Nixie tube. However, the cold cathode for the digit "5" is in reality an upside down "2" cathode. These space-race era Russian manufactured tubes reflect an efficient and cost effective design philosophy from the cold war superpower! Both unexpected, effective, and thought provoking! And a neat conversation starter!

#### IN-8-2 Nixie Tube

New old stock tubes, with a digit height of .7", an overall tube diameter of .75", and an overall tube height of 2". These tubes provide the classic soft glow of the original Nixie tube. Identical to the IN-14 tube in size and display quality, however the digit "5" is a true digit "5" just like the original domestic Nixie tubes. You lose the provocative conversation starter of the upside down "2" but you get an authentic "5" in its place!



Teak Maple Hardwood Base



Polished Aluminum Base



See-Through Acrylic Base





## PLUG-IN TUBES!

We're not new to Nixie tube clocks and devices. We also assume a lot of you aren't either. Nixie tubes are solder-in components. There are no rigid pins like a vacuum tube to plug in, there are 13 flexible wires to solder in! When building your kit, that part isn't overly difficult. However, when a tube needs to be replaced, it can be quite the challenge. After all, the solder-in tube is indeed... soldered in!

Even with the best desoldering tools and skill, you still have to take the clock apart, and risk damaging the PC board during the removal procedure or breaking a tube during the replacement procedure. We made it easy with the Quick Change Tube sockets. Your IN-14 or IN-8-2 tubes get soldered to small daughter board and socket assembly that plug directly into your main clock board. Need to replace a tube? Just pull it out, and plug in another one! Need to swap out your IN-14's with IN-8-2's? Just pull them out, and plug them in! It's that easy.

## THE CLOCKS

Both clocks perfectly mesh today's technology with the Nixie era technology of the 60's. The brain of the clock is the MicroChip PIC16F19XX PIC series micro-controller which controls all functions of the clock. The Nixie tube display is driven with a Supertex HV5812 high voltage driver. From there, either your quick change IN-14 or IN-8-2 Nixies are used. But it only starts there.

Of course, features you'd expect with a typical clock are all supported with the Nixie clock... and a whole lot more! Time wise, the clocks are designed around a quartz crystal timebase, therefore are not AC power frequency dependent like a lot of clocks. This means they can be used in any country regardless of power frequency, with the included 12VDC regulated power supply. The clocks are also programmable for 12 or 24 hour mode, various AM/PM indications, programmable leading zero blanking, and include a programmable alarm with snooze. Unlike most Nixie clocks, the clocks also display the date in DD.MM.YY, MM.DD.YY, or YY.MM.DD format, which can be programmed to display for a few seconds at the end of each minute either as a static display, or by a neat scrolling in/out from alternating sides of the display.

Display wise, the clocks feature a programmable night mode with dim or blank display, a programmable master blank tube saver, hard or soft fade digit change, and even have a built-in "Slot Machine" cathode poisoning prevention routine. All of these features are the same whether you choose IN-14 or IN-8-2 Nixie Tube models.

Programming and setting the clock is a breeze with simple 2-button entries on the rear panel.



## FULL COLOR LED ILLUMINATION

We have jumped the technological time line by adding the latest multi-colored LEDs to the base of the Nixie tubes to provide up to 729 illumination colors to highlight the glass tubes! The LED lighting can be programmed to any color and brightness combination of the colors red, green, or blue to suite your mood or environment.



You can then program the LED lighting colors and intensities to be continuously on, off, change with each hour or range of hours, auto color cycling, and other combinations! The lighting provides a distinctive subtle highlight with the teak/maple base, a reflective ambience with the polished aluminum base, and an all-out blazing color display with the see-through acrylic case!

## GPS EXTERNAL TIME BASE REFERENCE

Yes, you read that correctly... a vintage Nixie clock with GPS time base synchronization! The clock is already around a quartz crystal controlled timebase for high accuracy and zero dependency on incoming power line frequency. This time we leaped over the technological time line by integrating an optional GPS time base reference for the ultimate in clock accuracy!



By plugging in the optional GPS receiver module, the clock will receive GPS time using NMEA-0183 protocol. The small GPS receiver module is factory assembled and tested, and plugs directly into the back of the clock with its attached 10' cable. Needless to say, the receiver module needs to "see" the GPS satellites and therefore needs to be located near an outside window or outside.

## SEE IT IN ACTION!

If you want to see these clocks in action, visit [www.ramseykits.com/nixie](http://www.ramseykits.com/nixie). You will see that warm golden glow of digital numbers changing before your eyes!

## THE ULTIMATE CONVERSATION PIECE!

Show your nostalgic fondness for yesterday's technology with a Nixie tube clock. It is rather ironic that in their heyday the use of Nixies was considered too expensive for consumer products like clocks, and here we are today! The unmistakable soft orange glow and the remarkable display features in your choice of custom bases! Then there's the discussion of Russian tubes made during the cold war, with an upside down "2" as a "5", GPS timebase reference in a vintage clock, and programmable color LED lighting... it just doesn't get any better than that! Get on the retro bandwagon with your very own Nixie classic clock! *(All my family members went nuts, and had to have one! On my dime, of course!)*

IN14TM2	Nixie Tube Clock, IN-14 Tubes, Teak Maple Hardwood Base, Kit	\$299.95
IN14TM2WT	Nixie Tube Clock, IN-14 Tubes, Teak Maple Hardwood Base, Factory Assembled & Tested	\$359.95
IN14AL2	Nixie Tube Clock, IN-14 Tubes, Polished Aluminum Base, Kit	\$309.95
IN14AL2WT	Nixie Tube Clock, IN-14 Tubes, Polished Aluminum Base, Factory Assembled & Tested	\$369.95
IN14PC2	Nixie Tube Clock, IN-14 Tubes, See-Through Acrylic Base, Kit	\$279.95
IN14PC2WT	Nixie Tube Clock, IN-14 Tubes, See-Through Acrylic Base, Factory Assembled & Tested	\$339.95
IN82TM2	Nixie Tube Clock, IN-8-2 Tubes, Teak Maple Hardwood Base, Kit	\$329.95
IN82TM2WT	Nixie Tube Clock, IN-8-2 Tubes, Teak Maple Hardwood Base, Factory Assembled & Tested	\$389.95
IN82AL2	Nixie Tube Clock, IN-8-2 Tubes, Polished Aluminum Base, Kit	\$339.95
IN82AL2WT	Nixie Tube Clock, IN-8-2 Tubes, Polished Aluminum Base, Factory Assembled & Tested	\$399.95
IN82PC2	Nixie Tube Clock, IN-8-2 Tubes, See-Through Acrylic Base, Kit	\$299.95
IN82PC2WT	Nixie Tube Clock, IN-8-2 Tubes, See-Through Acrylic Base, Factory Assembled & Tested	\$359.95
IN14QC	Spare/Replacement IN-14 Nixie Tube With Quick Change Socket Parts, Kit*	\$29.95
IN14QCWT	Spare/Replacement IN-14 Nixie Tube With Quick Change Socket Parts, Assembled & Tested*	\$39.95
IN82QC	Spare/Replacement IN-8-2 Nixie Tube With Quick Change Socket Parts, Kit*	\$34.95
IN82QCWT	Spare/Replacement IN-8-2 Nixie Tube With Quick Change Socket Parts, Assembled & Tested*	\$44.95
INGPS	Optional GPS Timebase Receiver Module, 10' Cable, Factory Assembled & Tested	\$49.95

\* Spare Nixie tubes are reserved solely for our loyal clock customers to assure continued availability

## FEATURES & SPECIFICATIONS

Tube Type:	-IN-14 or IN-8-2 with quick change socket -Digit height: .7" -Tube diameter: .75" -Tube height: 2"
Display:	-Displays time in hours, minutes, seconds -12 or 24 hour mode
Display Modes:	-3 display modes: hard, soft, soft with scrollbar
Time Base:	-Quartz crystal controlled -Plug-in optional GPS external time base reference
Programmable Features:	-Programmable 12 or 24 hour mode -Programmable date DD.MM.YY, MM.DD.YY, or YY.MM.DD -Programmable date display each minute -Programmable standard date display or scrolling date display -Programmable leading zero blanking -Programmable night mode, blank or dim -Programmable master blank tube saver -Programmable neon colon indicators including individual on/off, flashing AM/PM, steady AM/PM -Dedicated DST switch
Alarm:	Alarm with programmable snooze
Nixie Tube Mood Lighting:	-RGB 729 color lighting at each Nixie tube base, programmable on/off, by time, or auto color changing
Second Reset:	-Seconds can be reset to 00 for precise setting
Memory:	-Supercapacitor backup to maintain time during short power outages
Time/Date Setting:	-Simple two button setting
Tube Protection:	-Built-in "Slot Machine" cathode poisoning prevention routine
Base Material:	-Solid Teak and Maple hardwood, handmade and hand rubbed to a fine satin finish -Solid milled aluminum, hand polished to a fine mirror finish -Clear acrylic plastic, completely see-through to view all interior components and illumination LEDs
Power:	-12VDC, 500mA, 2.1mm plug, center positive (AC121 90-264VAC 12VDC 1A green level-V efficiency regulated power supply included)
Dimensions:	-Teak Maple: 4" x 9.5" x 3.5", 1.1 lbs -Polished Aluminum: 3.1" x 8.5" x 3.25", 1.4 lbs -Clear Acrylic: 3.2" x 7.3" x 3", 0.6 lbs

with an optional GPS time base reference for the ultimate in clock







**NEW!**

## Compact Nixie Tube Clock

- ✓ Brand new mini 4-tube version of our classic Nixie clock!
- ✓ Quartz crystal timebase!
- ✓ Choice of Teak hardwood or see-through acrylic base!
- ✓ Programmable blue LED tube mood lighting
- ✓ 12 or 24 hour modes!

### The Little Brother To Our Classic Nixie Clock!



This 4 digit Nixie tube clock is the perfect "little brother" to our latest IN-14 and IN-8-2 series Nixie clocks. If you're not familiar with Nixie tubes or their history, check it out on the previous page. In short, while once the standard for digital displays, they have since (and since meaning a long time ago!) been replaced by LED, LCD, and Vacuum Fluorescent displays. Nixie tubes were considered cold cathode tubes filled with neon gas with a wire mesh anode and a set of very intricate cathodes in the shape each of the numerals to be displayed.

This little clock uses 4 ZM/GN series nixie tubes that measure approximately .7" in diameter by 1.8" high. The hour/minute separator is a classic NE2 style neon bulb. The clock features 12/24 hour modes, 12VDC operation with a quartz crystal timebase, programmable leading zero blanking, programmable AM/PM configurations, programmable night mode, and supercapacitor backup. Like its big brother, this little clock also features blue LED tube illumination, allowing you to program the display mode as well as 10 day and night levels.

For a perfect vintage look, this little beauty is available with our signature teak hardwood base, hand crafted and rubbed to a furniture quality satin finish. For a futuristic look, our see-through acrylic base allows you to look inside the clock to see the entire circuitry as well as the tube display. The choice is yours! The clock is designed around a quartz crystal controlled timebase for high accuracy and zero dependency on incoming power line frequency, therefore, making it compatible throughout the world! The clock runs on 12VDC at 500mA, and our 90-264VAC green level-V power supply is included. From the soft Nixie tube glow, the LED tube illumination, to the choice in bases, if you're looking for a small compact Nixie clock, this is it! (Note: Various tubes from the Z5700M, ZM1082, GN-9A families and other pin-compatible tubes may be supplied with this kit, according to tube availability)

ZM4TM	Nixie Tube Clock, ZM Tubes, Teak Hardwood Base, Kit	\$249.95
ZM4TMWT	Nixie Tube Clock, ZM Tubes, Teak Hardwood Base, Factory Assembled & Tested	\$299.95
ZM4PC	Nixie Tube Clock, ZM Tubes, See-Through Acrylic Base, Kit	\$229.95
ZM4PCWT	Nixie Tube Clock, ZM Tubes, See-Through Acrylic Base, Factory Assembled & Tested	\$279.95
ZMSERT	Spare/Replacement ZM/GN Series Nixie Tube*	\$29.95

\* Spare Nixie tubes are reserved solely for our loyal clock customers to assure continued availability



**KIT**

## Jumbo Multifunction Digital Clock

- ✓ Four huge red 7-segment displays
- ✓ Optional temperature sensor available
- ✓ Displays time, temperature, and OPEN/CLOSED
- ✓ Choose between 12 or 24 Hour Time, Celsius or Fahrenheit
- ✓ Battery Backup

**Bright and Bold Time and Temperature!**

The Jumbo Single Digit Clock below has always been a fun kit for those looking for a quirky clock, but what if you want the whole clock!? Well, we finally have the answer! This kit combines four of the jumbo seven-segment displays below into one giant display perfect for offices, computer rooms, and shop windows! Not only does it display the time in your choice of either 12 hour or 24 hour formats, it can also display temperature in Fahrenheit or Celsius! A bonus mode cycles automatically between your choice of time, temperature and OPEN or CLOSED ("CLOSED" scrolls across the display) or a combination of the three. Easy-to-use controls let you set the time and switch modes. You can even put the OPEN/CLOSED switch in a remote location so you can toggle easily from the other side of your shop! And it even has a secret bonus feature: hold down the "HOUR" button and apply power and it will display the AC frequency of your power grid! The entire clock is ready for easy wall-mounting and measures 9" W x 2.9" H x 1.26" D. From Velleman.

K8089	Jumbo Multifunction Digital Clock Kit	\$84.95
K8067	Temperature Sensor Kit	\$19.95
VM132	Temperature Sensor, Factory Assembled & Tested	\$24.95
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency	\$9.95

## Jumbo Single Digit Clock

- ✓ One giant red 7-segment display!
- ✓ One button operation!
- ✓ Time is displayed as a sequence of digits!
- ✓ The ultimate gadget!
- ✓ Includes the hi-tech looking enclosure!
- ✓ Dark mode

Now THIS is the ultimate gadget digital clock for the electronic enthusiast! It's just one single digit... but it's a big one! A huge bright red 57mm, 7-segment display brightly displays complete 12-hour time format in a sequence of digits... one digit at a time! And for those that don't know how large a 57mm 7-segment display is, the numeral itself measures 2.25" x 1.6"! This clock will definitely be a conversation piece!

But you don't just get a large 7-segment display with some parts on the back of it. The display is mounted in a dark attractive hi-tech enclosure that features a single button to control all the features of the clock! It also includes a "blank display" dark mode. Built-in clock accuracy is 30ppm. Runs on 9-12VDC at 150mA or our AC121 power adapter. Finished case measures 2.9" x 2.3" x 1.3". From Velleman. (One, Two, Three, Four... Only you will know the time is 12:34!)

MK153	Jumbo Single Digit Clock Kit	\$26.95
-------	------------------------------	---------



**The Most Unique Clock You'll Find!  
But Don't Take Your Eyes Off It!**



**KIT**

**Digital Clock Kits Are Back!**

Not your everyday clock kit! This digital clock kit features red 7-segment LED displays in a modern attractive case. Automatic timebase selection gives you the option of internal or line-frequency controlled 50/60 Hz.

Internal timebase has a fine tuning adjustment for precision time keeping. It can also be set for either 12 or 24 hour mode and features battery backup (3 AA batteries, not included) in case of a power failure. Runs on 9V AC or DC. Order our AC121 power supply. Comes complete with the custom designed case to give your clock a great finished look. From Velleman.

MK151	LED Digital Clock Kit	\$29.95
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency	\$9.95



## LED Digital Clock

- ✓ Automatic timebase selection!
- ✓ 12/24 hour mode
- ✓ Battery backup

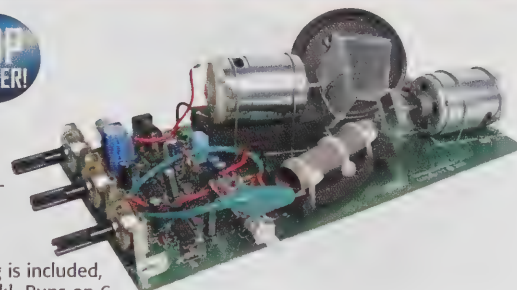


## Laser Light Show

- ✓ Audio input modulates pattern!
- ✓ Adjustable pattern and speed
- ✓ Projects neat motorized patterns



**True Laser Beam Patterns...  
With Audio Modulation!**

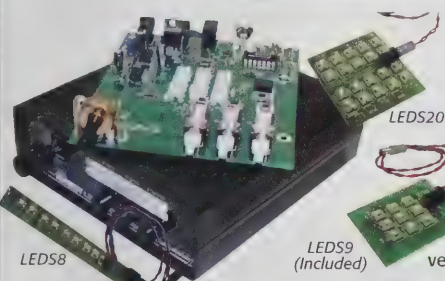


You've probably seen a laser show at concerts or on TV. They're pretty impressive to say the least! Knowing that you can't afford a professional laser display we challenged our engineers to design one that's neat and easy to build, yet inexpensive. The result? The LLS1 Laser Light Show! This thing is sweet! It utilizes two small motors and a small standard laser pointer as the basics. Then we gave it variable pattern and speed controls to customize the pattern!

Not enough, you say? How about a line level audio input to modulate the pattern with your music? You bet! Everything is included, even the small laser pointer. And to make the kit absolutely safe we used plastic mirrors instead of glass that could break! Runs on 6-15VDC or our standard 12VDC AC Adapter (not included). If you're looking for a fun and neat little laser kit, the LLS1 is for you! (Goes well with the CD playing on the front cover!)

**LLS1** Laser Light Show Kit  
**AC121** 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

**\$49.95**  
**\$9.95**



**Dance To the Beat!**

## High Power LED Strobe Light

- ✓ Everlasting LEDs won't burn out!
- ✓ Variable flash rate or audio trigger!
- ✓ Bass or treble trigger modes!
- ✓ Use as a stroboscope for stop action effects!
- ✓ Safe low voltage construction-no high voltage or fragile Xenon tube to break!

Everyone has seen Xenon stroboscopes "stop" a spinning quarter or flash to music. Now you can get the same effect without the expense and hassle of high voltage Xenon tubes! That's right, a strobe without a Xenon flash tube to break! The price of super bright LEDs keeps falling as their light output keeps increasing, making them affordable for everything from traffic signals to vehicle tail lights... and now, flashing strobe lights!

A plug-in 3x3 array of super bright Telux™ LEDs creates a brilliant, sharp flash similar to a Xenon flash tube. The LEDs can also be mounted directly on the main PC Board if desired. In the standard flash mode, a variable rate control varies the flash frequency from approx. 1 to 220 flashes per second. In the audio sync mode, the flash is triggered by any audio input you provide into the standard RCA audio input connector. Built-in low and high pass filters allow you to select either bass or treble music triggering! An external trigger in/out connector lets you connect multiple units together for simultaneous flash.

Optional plug-in display boards with 8 or 20 LEDs are available for even more strobing power! Just imagine surrounding your room with a few of these, triggered to your stereo! Runs on 12-15 VDC and unlike the high voltage Xenon strobes of the past, the LEDS1 is safe for the kids to build! The plug-in display boards may be mounted on top of the case, or remotely located. Be one of the first to experience the new high output LEDs! (No, an 8-track of disco music and a leisure suit aren't included with this kit!)

**LEDS1C** High Power LED Strobe Light Kit With Case  
**LEDS8** Display Board, Inline Array Of 8 LEDs  
**LEDS20** Display Board, 5x4 Array Of 20 LEDs  
**AC121** 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

**\$49.95**  
**\$17.95**  
**\$29.95**  
**\$9.95**

## LED Windmill Display

- ✓ 31 Dazzling Red LEDs!
- ✓ Unique Pattern!
- ✓ Adjustable Rotation Speed!

**Mesmerizing Lights!**



**Wired & Tested**



A fun to build LED display kit for any electronic enthusiast! A standard adapter or 9V battery will power this fantastic windmill display with visually "rotating" arms. The rotation speed is adjustable using the onboard potentiometer. Supply Voltage: 9-12VDC / 300mA. Dimensions: 2.92" x 3.56". From CanaKit. (Not as impressive as Pete Townshend's!)

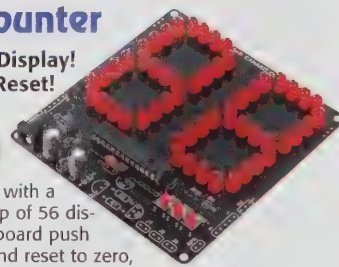
**CK176** LED Windmill Display Kit **\$24.95**  
**UK176** LED Windmill Display, Assembled & Tested **\$34.95**

## 2-Digit XL Up/Down Counter

- ✓ 56 LEDs Form an Eye Catching 2.5" Display!
- ✓ 3 Switches to Count Up/Down and Reset!
- ✓ TTL Inputs!



**Wired & Tested**



This is a great looking digital up/down counter with a large 2-digit 2.5" (63 mm) LED display made up of 56 discrete bright LEDs. The circuit includes three onboard push button switches to manually count up, down and reset to zero, plus corresponding TTL inputs for the same functions for connection to external circuits or microcontrollers. Supply Voltage: 6-12VDC or 5VDC Regulated. Dimensions: 3.70" x 3.85". From CanaKit.

**CK214** 2-Digit Extra Large Up/Down Counter Kit **\$39.95**  
**UK214** 2-Digit Extra Large Up/Down Counter, Asmb & Tested **\$59.95**

## LED Dual White Strobe

- ✓ 2 super bright white LEDs!
- ✓ Powerful flash effect!
- ✓ Adjustable speed!
- ✓ Includes front panel faceplate!

**OK, You Got My Attention!**

This adjustable-speed strobe is great for parties, projects, as attention grabbers, and a whole lot more! The awesome strobe effect is achieved with super-bright LEDs, and you can control the speed of the flashing anywhere from 1-60 flashes per second! Besides an attention getter it makes a great "pocket strobe" to observe moving parts and rotating machinery.

Also features a toggle to switch quickly between fast/slow flashing. Powered by a standard 9V battery (not included). Measures 2.2" x 1.3" x 1.6". From Velleman.

**MK147** LED Dual White Strobe Kit **\$10.95**



## High Power LED Driver

- ✓ High efficiency switch-mode circuit!
- ✓ Drives the latest high power LEDs!
- ✓ Short circuit protection!
- ✓ Compact size fits any project

**Use Them... The Costs Came Down!**



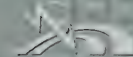
High-power LEDs are quickly finding their way into the mainstream thanks to their ever-lowering cost and high-reliability. Get some into your projects easily with this compact and efficient driver! It may be small, but it features short circuit protection, a built-in rectifier for easy AC source connection, and will deliver the accurate constant current needed to drive high-power LEDs correctly! Use it at home, for a club, on a stage, in education, architectural lighting, science projects, etc... This versatile circuit can even double as a fixed current NiCd/NiMH battery charger!

Delivers 350mA or 700mA at a constant current. Input voltage 6-12VAC or 9-18VDC. Power consumption 650mA max. Measures 1.8" x 1.2" x .64". From Velleman.

**K8071** High Power LED Driver Kit **\$14.95**







## Blinky-Eyes Animated LED Display

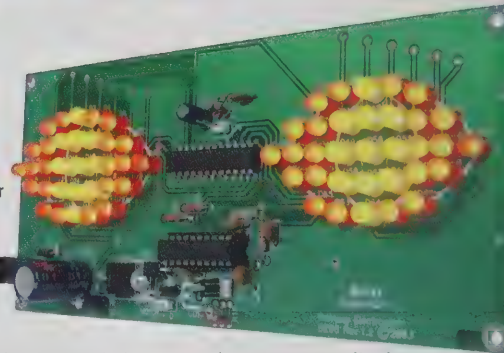
- ✓ Blinking eye display of 66 super bright LEDs!
- ✓ Microprocessor controlled
- ✓ Changes brightness with ambient light levels
- ✓ Animated with constant motion!

The ultimate animated LED kit that will dazzle you and delight your friends! Uses a microcontroller to randomly select from many different animations such as a long pause before a wink or a twinkle of the eye to startle passers-by. Great for Halloween applications.

Four animation modes: 1. Off for long random periods, then blinks or winks. Designed to scare! 2. On for long periods before performing an animation, perfect for costumes and displays! 3. Animates all the time for constant motion, perfect display attention-getter. 4. Random fire! When placed in a pumpkin, will light the pumpkin like there is a fire within! Truly awesome!

As if all that weren't enough, the BE66 can also control a small hobby motor to shake bushes at random intervals or signal an external player to make a scary sound! Also has a CDS cell to control various modes of automatic light control. Runs on 9-20VDC or optional AC power supply. (No boring twinkle kit here! You have to see it to believe it! If anything will grab your attention, this will!)

BE66 Blinky-Eyes Animated Display Kit \$59.95  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency \$9.95



**A Real Eye Catcher!**

## Mini LED Light Chaser

- ✓ 5 bright red LEDs!
- ✓ Sequentially flash in order!
- ✓ Great attention grabber!
- ✓ Runs on standard 12VDC!

**KIT**

**Wired & Tested**

*Just Like Those Classic Turn Signals!*

Remember the sequential flashing turn signals on the classic T-Birds and Cougars? Hey, if you can remember KITT you can also remember these! This little kit flashes 5 high intensity 5mm red LEDs sequentially in order. Great small attention getter for signs in stores, exhibitions, model R/C cars, and a whole lot more. Get flashing with the CK010! (Just like Ritchie's award winning classic T-Bird... What a beauty!)



CK010 Mini LED Light Chaser Kit \$12.95  
UK010 Mini LED Light Chaser, Assembled & Tested \$16.95

## LED Traffic Signal

- ✓ 4-way traffic signal!
- ✓ Automatic switching!
- ✓ Adjustable delay!

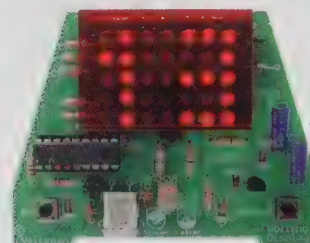
**TOP  
SELLER!**

*Sure To Stop The Traffic!*

Impress your friends by building a really neat, simulated 4-way traffic signal light! Bright red, green, and yellow LEDs are positioned just like a 4-way signal and automatically sequence. Adjustable timing allows you to change the delay, something we all wish we could do on the road! Runs on a standard 9V battery (not included) and draws only 15mA for long life. Perfect for model railroads, models, and any hobbyists that just want to build something really neat! Measures 2" x 1.4" x 4.5". From Velleman. (No red-light cameras on this one!)



MK131 LED Traffic Signal Kit \$7.95



**KIT**

*Put The Clock In Motion...  
Scroll The Date & Time!*

This scrolling timepiece shows the date and time in alpha numeric characters in a smooth rolling animated display. A typical display would be "Jun-23 12:57".

No external editor is needed to set the date/time. Just select hours, minutes, month or day with the "select" key and enter the values with the "set" key. Time is set in the 24 hour mode and displayed in the 12 hour mode. Runs on 9-12VDC and uses a Type 6LR61/6F22 backup battery if required. Measures 1.8" x 3.5" x 2.6". From Velleman.

MK123 Rolling Clock Display Kit \$16.95

## Rolling Message Display

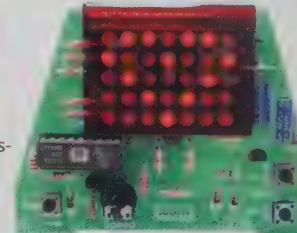
- ✓ 35 LED display!
- ✓ 16 character message
- ✓ Adjustable speed

*Scroll Your Message!*

Create your own scrolling or rolling message with this high visibility LED display! Contains 35 brilliant LEDs to light up each character of your custom message, which can be up to 16 characters.

Built-in message editor is simple to use. Press "set" to change a character, then use the "up/down" key to select the character and end with the "<" key. Includes a standby/run mode to restart the display. Runs on 9-12VDC and uses a Type 6LR61/6F22 backup battery if required. Measures 1.8" x 3.5" x 2.6". From Velleman.

MK124 Rolling Message Display Kit \$16.95



## LED Animated Chevron

- ✓ 28 LEDs create a great animation!
- ✓ Adjustable speed!
- ✓ 10 different animation speeds!
- ✓ Includes front panel faceplate!

*Hey You... Look This Way!*

This animated chevron-type arrow display uses 28 bright red LEDs to display a variety of different animations. Rolling, scrolling, inverse scrolling, blinking, partial blinking and more! The choice of animation and the speed can be easily selected from the front panel, and built-in memory stores your choices even when the power is off. A cool way for businesses to highlight sales, etc., use as a pointer to emergency exits, or just as a great attention getter!

Also useful for auto safety applications - tell 'em to move over! You can power it either with an external supply, or use a standard 9V battery for extra versatility. Dimensions: 2.5" x 5.12" x 0.63" From Velleman.

MK176 LED Animated Chevron Kit \$22.95

## LED Animated Smiley

- ✓ Choose from 9 expressions to suit any mood!
- ✓ Static and animated expressions!
- ✓ Auto power-off saves battery life

*Hey You... Look This Way!*

This cute little smiley toy is the perfect desk companion! Let everyone know how you're feeling with one of 9 different brightly-lit cartoon faces! You can choose between any of the static expressions, or animate them for a dynamic display. This kit is powered by 3x standard AAA batteries. Dimensions: 3" x 3" x 1.28" From Velleman.

MK175 LED Animated Smiley Kit \$19.95



## Rolling Clock Display

- ✓ Scroll the time of day!
- ✓ 35 LED display
- ✓ Adjustable speed





## 2-Digit Queue Counter Display

- ✓ Large 2.5" Digits, Created With 56 Bright Red LEDs!
- ✓ Wired Remote Button Placement Option!
- ✓ Includes "Ding Dong" Chime Alert Generator - Gets Their Attention!
- ✓ TTL Inputs for Optional External Control

### Who's Next in Line?

This digital customer "turn" display unit is ideal for busy shops or offices in need of an attractive and handy way to keep track of customer lines! The large 2.5" (63 mm) display is made up of two extra large digits, created by 56 bright discrete red LEDs. The counter circuit is based around a Microchip PIC Microcontroller for maximum features in a small package, and includes three on-board switches for Count Up, Count Down and Reset. A large push button switch that can be connected to any of the three on-board switches is also included, so you can set it up for easy remote operation (wire not included) so you can put the display anywhere you want! Last but not least - an optional speaker can be added to the counter so that each time it counts up, a "Ding Dong" chime sound is produced twice to notify the customers! Supply Voltage: 6-12VDC or 5VDC regulated. Dimensions: 3.70" x 3.85". From CanaKit. (Start your own DMV?)

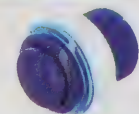
CK299  
UK299

2-Digit Queue Counter Display Kit  
2-Digit Queue Counter Display - Wired & Tested

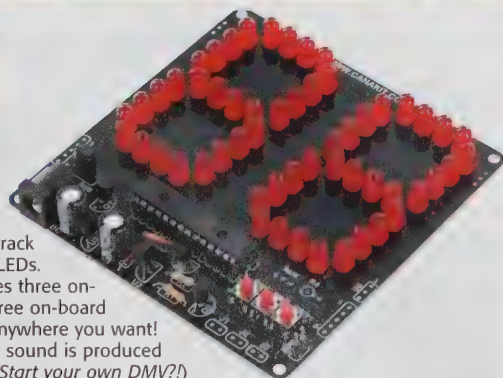
\$49.95  
\$69.95

KIT

Wired & Tested



Large Push Button  
Switch Included!



Super Bright...  
Super Small!

What can be said about a Surface Mount blinky kit? The BL2 is the revival of our classic BL1 blinky kit in a new, modern form! Yes, two LEDs that blink, just like our original blinky kit that has made us famous! This one, however, is subminiature and designed with SMT components! Why, you ask? Besides the obvious, a really neat, super bright attention grabbing display, there's no better way to learn how to work with SMT components! Don't worry, we even include spare SMT chips for when you goof up!

When complete, the BL2 provides alternating super bright red and blue LEDs. Runs on 6VDC and includes two LR55 button cells and a cell holder to mount on the backside of the board. It's one complete unit! If you don't want SMT LEDs you can also use regular T1 3/4 LEDs (included). If you want to learn what SMT is all about, the BL2 is for you! While you're at it, you might want to check

out the magnifiers in our tools section, you'll need them! (You'll definitely want to keep your reading glasses handy when you build this one!)

BL2 High Intensity SMT Blinky Kit

\$17.95

## LED Switcher Blinky

- ✓ Run a 3V LED with 1.5V!
- ✓ Learn about switching supplies!
- ✓ Super bright Blue LED!

See... It IS Possible... And Learn How!

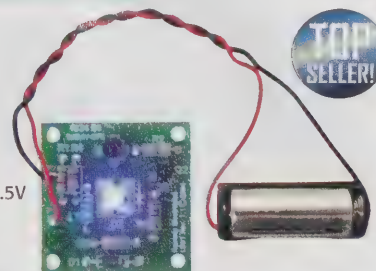
More than 30 years ago we came out with our ever famous BL1 Blinky kit. Thousands and thousands were built teaching people exactly how LEDs and transistor circuits work. Now we're going one step further! The LSW1 will show you how to light a 3V LED with a single 1.5V battery! The circuit is actually a very unique "switching power supply" which steps up the 1.5V battery voltage to around 5VDC! If you're new to switching power supplies this is the perfect little kit to get your feet wet!

If you're a serious hobbyist and want to see the neatest little circuit then you're in for a treat too! When you're all done you end up with a super bright Blue Telux™ LED running on 1.5V! But it doesn't blink you say? Sure it does... just at 140kHz! Requires a single AA battery (not included). Board measures 1.5" x 1.5".

LSW1 LED Switcher Blinky Kit

\$14.95

KIT



TOP  
SELLER!

## LED Red Blinky

- ✓ Tweak a child's interest!
- ✓ Perfect 1st learning kit!
- ✓ Thousands and thousands sold!

Great Starter Kit!

Alternately flashes two jumbo red LEDs. This is the kit you've seen on name badges, buttons, hats, and toys, but there's more to it than that! Add a couple of relays and Christmas light strings and you've got yourself a super light chaser just like the theater marquee. Add a zener diode and make an attention getting overvoltage warning light!

Runs on 3-9 VDC, typically a 9V battery (not included). Used throughout the world as the first learning kit for students young and old. Measures 1" square.

BL1 LED Red Blinky Kit

\$7.95

KIT



## Shaking Electronic Dice

- ✓ Just give it a shake like real dice!
- ✓ Microprocessor controlled!

Shake, Don't Roll!

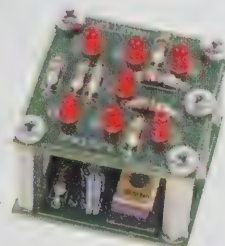
You don't have to throw it, just shake it and it acts just like regular dice! It rolls out slowly and flashes the last combination or "winning number!"

It's microprocessor controlled circuit is fun to learn! Runs on one 3V Lithium button cell (not included). Get two to simulate a pair of real dice to get "snake eyes" or "box cars!" Measures 1.4" x 1.4" x 1.3". From Velleman.

MK150 Shaking Electronic Dice Kit

KIT

\$13.95



## Dual Super Bright LED Display

- ✓ 2 super bright red LEDs!
- ✓ Auto-on at dark!
- ✓ Adjustable sensitivity!

Grab Their Attention Automatically At Night!

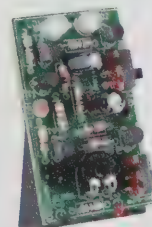
This little kit alternately flashes two super bright red LEDs that are extremely "attention getting"! But it goes beyond that. If desired, a built-in light sensor automatically turns it on at night and off at dawn.

Light sensor is adjustable. Runs on a standard 9V battery or external 9-15VDC power. Measures 2.2" x 1.3" x 1.6". From Velleman.

MK148 Dual Super Bright LED Kit

KIT

\$8.95



## SMT LED Smiley Face

- ✓ Alternating flashing SMT LEDs!
- ✓ Can be worn as a pendant!

Smile...And Learn SMT!

Build this little attention grabber and learn about SMT at the same time! Measuring only 1" this smiley face can be worn as a pendant or just as a conversation piece. And don't worry about losing or damaging the parts, as we give you extras! Requires a 3V Lithium Ion button cell. Measures 1.1" x .3". From Velleman.



MK141 SMT LED Smiley Face Kit

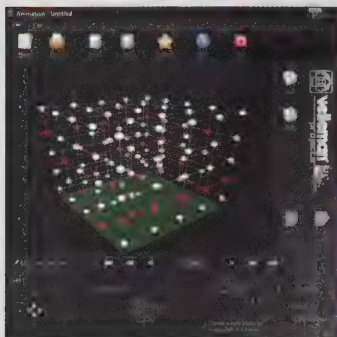
KIT

\$9.95



## Animated 3D LED Cube Display

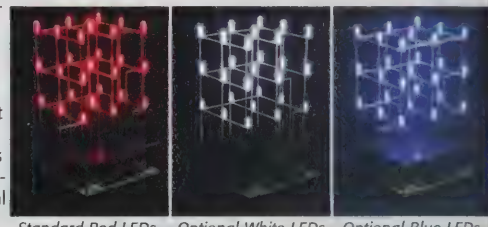
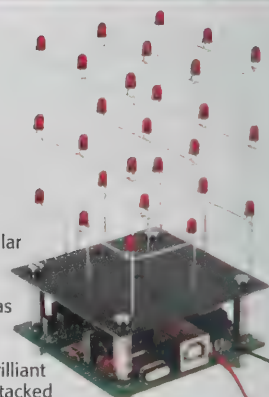
- ✓ Create a stunning 3D LED animated display!
- ✓ USB user programmable!
- ✓ Create and save up to 234 animation frames!
- ✓ 3-layer display with 27 LEDs!
- ✓ Built-in pushbutton controls plus remote control capability!
- ✓ Free downloadable Windows software to create and save your animations!



For decades we have brought you some of the neatest LED displays. It all started with our extremely popular "Blinky Kit" and has since followed technology from transistor circuits to integrated circuits, from through hole to surface mount technology, and from timer control to microprocessor control... but it doesn't stop there! How about 3D computer programmed and USB controlled! Not a bad continuation of technology as we continue into our 4th decade!

This kit provides a 3D 3-level display with 27 brilliant red LEDs! You can also order an optional kit of 30 brilliant white or blue LEDs to give your Cube an entirely different appearance. The three 3x3 levels are vertically stacked above a dual PC control board array and constructed with simple point-to-point soldering techniques. The bottom control board provides the "brains" to the unique display and includes a USB Type-B jack to interface into a Windows based PC. When your kit is completed, download the free application and driver software and you have a complete computer controlled animation program ready to create some of the neatest LED displays you've seen! The program allows you to create up to 234 animation frames and support basic geometric operations. (See screenshot!)

Once your animation is created, you can preview it in the software program, send it to the LED display, or save it to your HDD for future display use. Amaze your friends with a saved library of your own personal animation creations! The cube includes a pre-loaded animation with 102 frames that is divided up into several scenes including "rain" and "snakes". The entire Cube is USB powered, but also includes a standard 9V battery clip for non-computer stand-alone operation. Check out the brilliant "night" view of the Cube with the standard red LEDs as well as the optional white and blue LEDs. From Velleman.



Standard Red LEDs Optional White LEDs Optional Blue LEDs

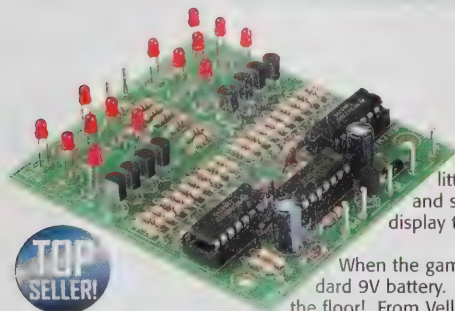
MK193  
LEDW30  
LEDB30

Animated 3D Red LED Cube Kit,  
Brilliant White, High Intensity, LED 30 Pack  
Brilliant Blue, High Intensity, LED 30 Pack

\$34.95

\$19.95

\$19.95



K3400  
AC121

Dual Electronic Dice Kit  
12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$17.95

\$9.95

## Electronic Roulette

- ✓ Spinning sound!
- ✓ Winner tune!

Easy To Spin This One!

This electronic version of roulette features a neat round PC board with 37 LEDs simulating a real spinning Roulette game! And when it spins, you hear the spinning sound with microprocessor technology! When the spinning stops and there is a winner you hear a winning tune! Easy assembly makes it a cool beginner kit that uses ICs. Runs on 3 AA batteries (not included). Board measures 3.6" diameter. From Velleman.

MK119 Electronic Roulette Kit



\$19.95

## 4 Player Quiz Table

- ✓ Shows first button pushed!
- ✓ Quizmaster reset!

The Correct Answer Is?

Just like the TV game shows, you can have up to 4 players "on the ready" just waiting to be the first one to answer the question. But how do you know who's first? That's simple with the MK133! 4 player push buttons are provided.

The first player to push their button is indicated with a latched on LED. Just like on TV! The "Quizmaster" button resets it for another round! If you have more than 4 players you can even daisy-chain two MK133s together for up to 8 players! Runs on a standard 9V battery (not included). Measures 4.3" x 3.1". From Velleman.

MK133 4 Player Quiz Table Kit



\$11.95



## Wheel Of Fortune

- ✓ Electronic LED spinning action!
- ✓ Spinning gradually decreases!

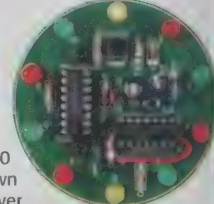
Where She Stops...

Acts just like the casino game! Just push the button and the 10 LEDs start showing a spinning action. They gradually slow down until the "winning" one remains lit. Push the button to start over again. Auto on/off assures a long battery life. Measures 2.6" x 1.3". Requires a standard 9V battery (not included). From Velleman.

MK152 Wheel Of Fortune Kit



\$7.95



## Electronic "Decision Maker"

- ✓ No more coin flipping!
- ✓ Ideal for the indecisive!
- ✓ One button operation!

Make Up Your Mind Already!

When a decision is simply too important to rationally analyze, let this handy gadget make the tough calls for you with a simple push of a button! One push and the green "Yes" and red "No" LEDs begin to flash. Flashing speed gradually decreases and only one LED remains lit.

What will it be? Yes or No? Push the button and find out! Also features auto power-off to conserve battery life, which, by the way, is a standard 9V battery (not included). Measures 2.2" x 1.2" x 1.4". From Velleman. (I wonder if these should be on the GSA contract!)

MK135 Electronic Decision Maker Kit



\$7.95





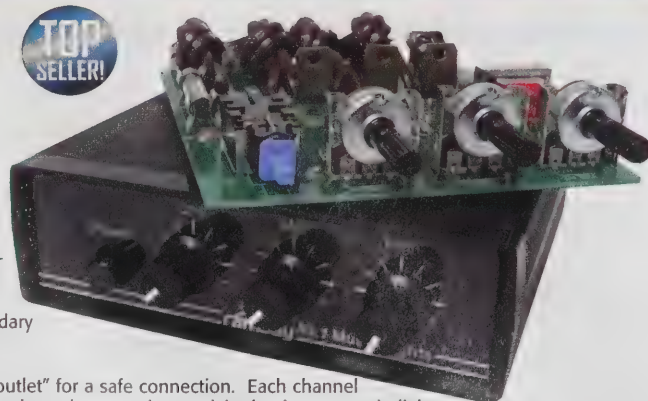
## Music Lights Controller

**KIT**

- ✓ Controls 3 channels of lights!
- ✓ Plug in your standard 110V lights
- ✓ Different lights flicker to different tone ranges of your audio
- ✓ Easy to connect, just plug in the lights
- ✓ Runs on 110VAC!

Create A Dazzling Display Of Light!

TOP SELLER!



See your music come alive and set the mood with our infamous music lights kit! This sweet little kit controls up to three separate incandescent light circuits to make them timed directly by the tonal qualities of your music. Set one channel output to respond to the bass beat or "lows" and really kick into the mood with some floods or spots. Set the "Mids" to control ambient lights and the highs to control some secondary lights. Turn your music on and have a party!

Input is a standard 110VAC plug, and each output is connected to a standard consumer "extension cord outlet" for a safe connection. Each channel load can be a maximum of 300 watts, and that's a lot of light! Plug in your holiday light strings and make them dance to the music! Plug in some strip lights around your room, set the controls and "crank'er up"!

The kit includes a custom case/knob set to give you a great finished look to match your stereo equipment. Can only be used with incandescent bulbs and fixtures, and cannot be used with high efficiency replacements, CFL's, fluorescents, or other non-standard lights. The case size 5"W x 11 1/2"H x 5 1/4"D. (Music lights, polyester leisure suits, and paisley shirts, they were all the rage!)

ML1C Music Lights Display Controller Kit, 110VAC

\$59.95

Wired & Tested

**KIT**

## 3-Channel AC Music Reactive Light Organ

- ✓ Generates Amazing Music-Synchronized Lighting Effects!
- ✓ Independently Adjustable Sensitivity for Low, Mid, and High Frequency Ranges
- ✓ Use the Built-in Microphone or a Line-Out From Your Audio System!

Get the Party Started!

This is a 3-channel Light (Color) Organ with built-in microphone and line input. Awesome for parties, school dances, nightclubs, special events, etc! Creates an amazing lighting effect in sync with your music! This kit is based on three sharp independent active band pass filters using two Quad Op-Amp Integrated Circuits. In addition, it incorporates three opto-isolators to fully isolate the four AC output channels from the control circuitry for additional safety!

Three independent controls vary the response sensitivity for low, midrange and high frequencies and the three onboard LED indicators show the status of each channel at any given time. In addition, a built-in microphone is incorporated that allows the circuit to capture the ambient sound and to operate without requiring a direct connection to your stereo system.

If you do want to connect directly to the line-out of your audio system, an audio pre-amplifier circuit is also built-in! The circuit can handle up to a maximum of 2A of lights per channel. Supply Voltage: regulated 12VDC. Dimensions: 5.69" x 3.18". From CanaKit.

CK185

3-Channel AC Music Reactive Light Organ Kit

\$49.95

UK185

3-Channel AC Music Reactive Light Organ, Factory Assembled & Tested

\$69.95

AC121

12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$9.95

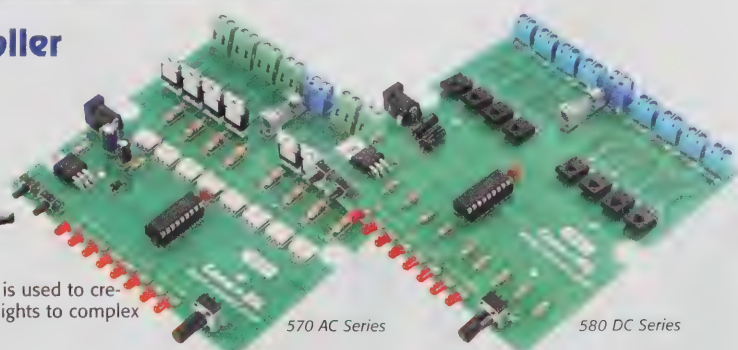
## 8-Channel, 20-Program Light Chaser & Controller

- ✓ 8 lighting channels!
- ✓ 20 built-in programmed effects!
- ✓ Front mounted speed control!
- ✓ Push button pattern reversal!
- ✓ PIC microcontroller!
- ✓ Available in AC or DC versions!
- ✓ Matching case set available

The Ultimate Light Controller... Available for AC or DC!

Wired & Tested

**KIT**



These light chaser controllers take lighting effects to a whole new level! A PIC microcontroller is used to create 20 pre-programmed lighting effects. These effects range from simple end-to-end running lights to complex patterns that are sure to draw attention.

The controllers are available in your choice of AC or DC output to match your display requirements. The DC version can handle lights between 6 to 24VDC up to a 1A per channel load. This makes it perfect (and easy) to connect groups of hundreds of LEDs, high power LEDs, and LED light strips per channel. Just imagine the dazzling display you can come up with! The AC version features 8 channels that are opto-coupler protected to provide complete isolation between the controller and the AC mains for optimum safety. The maximum load on each of the AC outputs is 1A at 110VAC.

Along with the 20 programmed effects the controllers feature a front mounted speed control to give you full control over the speed of your display. A program reversal push button switch is also provided to automatically reverse the running direction of the effects pattern currently running! 8 front board mounted LEDs display each lighting channel allowing you to preview your display from the controller.

The display applications for these controllers are endless and are great for holiday decorations, traffic safety signs, animated direction signs and a whole lot more. The controller board measures 4.8" x 4.8" and can be easily installed within your display. An optional custom enclosure is available that features see-through front panel to see the on-board LEDs. Runs on 6-24VDC at 150mA. From CanaKit.

CK570

8-Channel, 20-Program AC Lighting Controller Kit

\$49.95

UK570

8-Channel, 20-Program AC Lighting Controller, Factory Assembled & Tested

\$63.95

BX570

Custom Enclosure For 570 Series Controllers

\$19.95

CK580

8-Channel, 20-Program DC Lighting Controller Kit

\$49.95

UK580

8-Channel, 20-Program DC Lighting Controller, Factory Assembled & Tested

\$63.95

BX580

Custom Enclosure For 580 Series Controllers

\$19.95



## Running Lights Controller

KIT

- ✓ Controls 4 separate lights in sequence!
- ✓ On-board LED indicators
- ✓ Adjustable speed
- ✓ Easy assembly
- ✓ Runs on and controls 110-240VAC!

*Run Light, Run!*

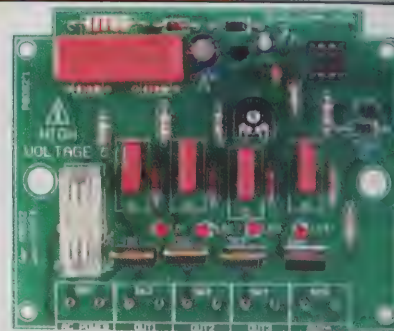
This neat little running light kit will power four incandescent lighting loads in sequence, so that the light appears to "travel" back and forth (just think of the red lights on the hood of KITT from Knight Rider... the original series of course, not the new one, ugh!).

Use it for a flashy light display on the dance floor or hypnotize unsuspecting victims with its rhythmic display! Speed is adjustable between 0.2Hz and 3.0Hz, to provide the light pattern you desire. Maximum load per channel is a whopping 450W at 240VAC and 230W at 115VAC. Input AC power is 110-240VAC depending on your output requirement. So it's compatible with standard US house-holds as well as European mains and commercial 208/220/230/240 sources and lighting.

On-board LED indicators show the actual output lighting display. Board measures 3.9" x 3.2" x 1.4" From Velleman. (Yikes, I remember KITT, watched it every week, maybe that's subconsciously why my ZL1 is black!)

K8032

4-Channel Running Light Kit



KITT!

\$38.95



KIT

*Let There Be Lights!*

## Light Computer Control Module

- ✓ Sixteen different patterns
- ✓ Seven outputs
- ✓ Adjustable speed
- ✓ External oscillator output
- ✓ Daisy-chainable
- ✓ Special two-unit link mode for 14-channel operation
- ✓ Pattern indication via LEDs

Light up the dance floor at a club or brighten up any party with this light control computer module. It's got outputs to control seven independent lights and you can choose from sixteen different programmed patterns! Clubs, parties, advertisements, sign installations, Christmas lights... the possibilities are endless!

The circuit is designed so that once installed, it can easily be controlled from the front panel. You also get on-unit visual feedback with the built-in status LEDs. If you need to control more than seven lights, no problem! The K5201 can be operated in a unique dual-unit mode specially designed to make two modules operate as one, and for additional flexibility an unlimited number of units can be daisy-chained for synchronous operation! Note, this controller is for use with resistive loads such as regular incandescent light bulbs. Not for use with transformer operated or fluorescent lighting. Dimensions: 5.3" x 3.1". From Velleman.

K5201

Light Computer Control Module

\$59.95

## Xenon Tube Strobe Light

- ✓ Ultra bright Xenon flash tube!
- ✓ Adjustable flash rate!
- ✓ Runs on 110-120VAC

*Oh No... We're Back To The 70's!*

Light up the dance floor, create lightning effects for Halloween, or pretend like you're in a silent film from the 1920s! The possibilities are endless with this compact and easy-to-build strobe kit. All you need is the disco ball, a place to hang it, and some old 8 track tapes!

This kit reminds me of my early Popular Electronics kit days in high school! Yep, one of the projects was a Xenon tube strobe kit and I built it... to go with my polyester leisure suit, paisley shirt, and white shoes! Decades later, these strobes are as popular as ever! Simple board construction includes a variable flash rate control from 2-20 flashes per second. 110VAC or 220VAC models available. From Velleman.

K5300

Xenon Tube Strobe Kit, 110-120VAC

K2601

Xenon Tube Strobe Kit, 220-240VAC

\$19.95

\$22.95

KIT



KIT

*Say It... In Mid Air!*

## LED Magic Message Wand

- ✓ Message floats in air!
- ✓ Fun at concerts, events
- ✓ High visibility red LEDs

This is as close as it comes to a "Magic Wand"! Shake it back and forth and brilliant messages seem to appear in mid-air! Six high intensity LEDs are microprocessor controlled to display messages and graphics that are pre-programmed into the wand.

You can also custom program a message of your choice! From amazing your friends, to making a statement at a concert or simply telling your loved one how you feel, the message wand can't be beat! Runs on two AAA batteries (not included), and the auto power off circuit gives you long battery life. Measures 6.4" x 1" x .9". From Velleman. (I tried to program it to say "I'm tired of writing catalog copy" but it was too many digits!)

MK155

LED Magic Wand Kit

\$17.95

## LED Sound-To-Light Converter

KIT

Wired &amp; Tested

- ✓ Ultra Sensitive Onboard Microphone!
- ✓ Adjustable Sensitivity!
- ✓ Powered by a Standard 9V Battery!

This super-sensitive sound-to-light converter incorporates a built-in microphone that captures any ambient sound and lights six high-brightness Red LEDs. Sensitivity is fully adjustable via a PCB mounted trimmer potentiometer. A great kit for fun, education or as a helpful tool to indicate a telephone rings, doorbells, alarms etc. for the hearing impaired. Dimensions: 2.30" x 1.85". From CanaKit.

CK457

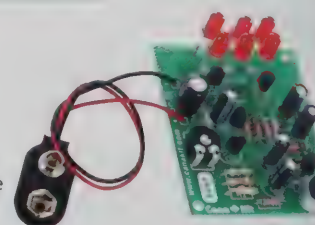
LED Sound-to-Light Converter Kit

UK457

LED Sound-to-Light Converter, Factory Assembled &amp; Tested

\$15.95

\$19.95







**KIT**

**Wired & Tested**

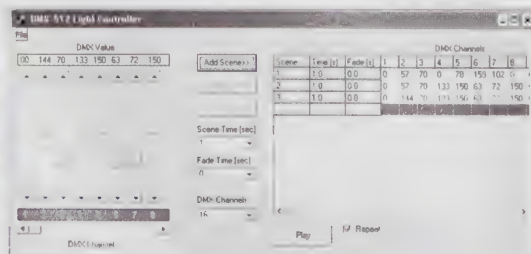
### 512 DMX Channels Over An XLR Cable!

At this point some of you may be wondering... "um, what is a DMX interface?" While it's not something you would find in a typical home, it's widely used in stage and music productions. DMX is short for an EIA-485 based communications protocol that is commonly used for stage lighting and stage effects. If you ever wondered - how do they control all those stage lights, lasers, and other effects remotely from a single control point... now you know!

This little controller is USB controlled via a PC or laptop. "DMX Light Player" software is included to give you flexible control of up to 512 DMX channels, each channel with 256 levels! Now you're starting to get it! DMX fixtures are connected to the controller via standard XLR cables. Multiple fixtures are simply "daisy-chained" together giving you one final connection to the controller.

## USB Controlled DMX Interface

- ✓ Control DMX fixtures with your PC via USB!
- ✓ 512 DMX channels with 256 levels each!
- ✓ Standard XLR output
- ✓ Rugged enclosure



In addition to the Light Player software, test software is included to test all fixtures and a custom DLL is also provided allowing you to write your own software. Any PC compatible with USB1.1 is compatible with the controller. The controller is powered via the USB cable connection, however an optional 9VDC battery can also be used for stand-alone testing. This is handy when using the built-in test mode that outputs to all 512 channels with adjustable levels without a USB connection or external software!

The controller is available as a do-it-yourself kit, or factory assembled and tested ready to operate. It comes complete with a professional enclosure, USB cable, and installation CD that includes test software, DLL, and DMX Light Player. If you need to control multiple stage lights and effects that have DMX control, but don't want to spend a fortune for a commercial controller, this USB controller fits the bill! Take total control of your lights with DMX! From Velleman.

**K8062** USB Controlled DMX Interface Kit  
**VM116** USB Controlled DMX Interface, Factory Assembled & Tested

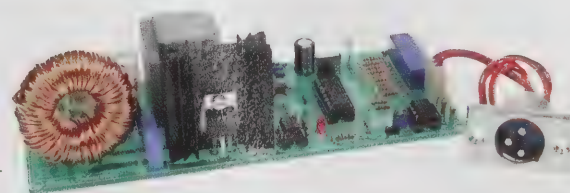
**\$67.95**  
**\$78.95**

## DMX Controlled Power Dimmer

- ✓ Dim standard incandescent and halogen lights
- ✓ Handles a 500W load at 110VAC
- ✓ Dip switch programming to any of 512 DMX addresses
- ✓ Stand-alone test mode

**KIT**

**No DMX Lights?  
No Problem!**



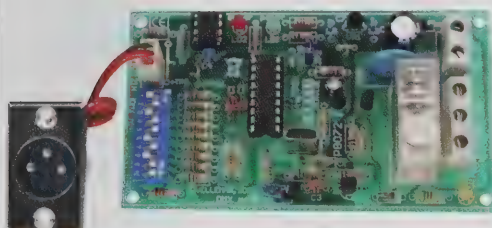
OK, so you got the introduction to DMX control above, so at least you know what the basics are. Get a commercial controller, or the inexpensive USB controller above, plug in a daisy-chain of XLR cables to a number of lights and fixtures that have a standard DMX input, set and map the addresses, and you're all set! Sounds simple, huh? Well, here's the next problem! What happens when you want to control standard incandescent lighting fixtures that don't have a DMX control? It's simple, use this simple single channel dimmer!

This little dimmer circuit allows you to control a lamp or group of lamps with your DMX controller. It is designed to dim resistive loads such as incandescent lamps and line operated halogen lamps (not low voltage halogens!). The controller has a primary power input of 115/230VAC so it can be used with either primary power mains. Likewise, the output follows the input voltage to power the light(s) you connect.

110VAC input will power 110VAC lights, 230VAC input will power 230VAC fixtures. The maximum resistive load is 1000 watts at 230VAC, or 500W at 115VAC. The dimmer can be programmed to any of the 512 DMX addresses with a simple dip switch. It also features a status LED for power and DMX error detection, toroidal filtering for low noise, and a stand-alone test mode. The DMX input is a standard XLR connector. The board measures 5.9" x 2.3" x 1.8". From Velleman.

**K8039** DMX Controlled Power Dimmer Kit

**\$54.95**



**KIT**

**Wired & Tested**

**Turn It On...  
Turn It Off!**

## DMX Controlled Relay Switch

- ✓ 8 Amp switching capacity!
- ✓ 512 DMX channel addressability!
- ✓ Relay hold in case of DMX signal loss
- ✓ Runs on 12VDC

What if you need to do more than dim a resistive incandescent light in your DMX control chain? What if you need to provide an on/off function? Just like the dimmer above, if you are switching a device that doesn't have a standard DMX control input, you're pretty much out of luck... unless you have this handy little relay board!

Here's how it works: First we plug this relay board into the DMX control daisy-chain (or directly to a controller if that's all you're controlling). Next, set the dip switches to the desired DMX address. There can be up to 512 addresses in a single DMX chain, so you've got plenty of room to add more devices later! Finally, map that address in your controller, and you're now "talking" to the relay switch with the controller, and can enable the on/off function of the relay. It's that simple!

The switch is actually a bus-controlled power driver. The on-board relay will be activated when the DMX value of the set channel equals 140 or more, and will shut off when the value is 120 or less. LED indication is provided on the board for power supply and DMX error detection.

In addition, "Safe DMX Data Stream" mode is used to reduce interference. If the DMX signal is lost (i.e. somebody trips on the cable!) the "Relay Hold" function will continue to latch the relay. DMX input is via a standard XLR connector. Relay switching capacity is 8A. The board runs on any 12VDC unregulated power supply or source. Available as a do-it-yourself kit or factory assembled & tested for immediate use. Board measures 4.1" x 2.4" x 1.2". From Velleman.

**K8072** DMX Controlled Relay Kit  
**VM138** DMX Controlled Relay, Factory Assembled & Tested

**\$30.95**  
**\$52.95**

## DMX CONTROL... What is it?

"DMX512 was originally intended as a 'lowest common denominator' protocol for use between interfaces supporting proprietary protocols. However, it soon became the primary method for linking not only controllers and dimmers, but also more advanced fixtures and special effects devices such as fog machines and moving lights."







## Electronic Watch Dog



- ✓ A barking dog on a PC board!
- ✓ Two barking sounds!
- ✓ Automatic sound detection!
- ✓ Eats very little and never sleeps!

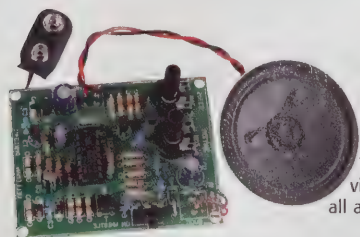
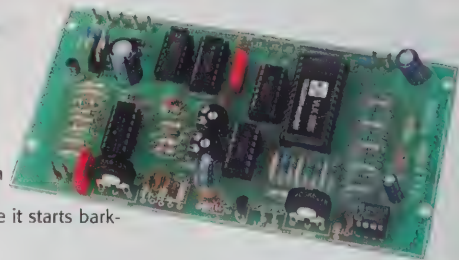
*Automatically "Barks" At  
The Sound Of Noise!*

There are many times when it's nice to have a barking dog react to someone at your door or a strange noise in the house when you're gone, but not all of us can have a dog! The answer... the Electronic Watch Dog! This unique circuit generates two different sounds of barking dogs. You can select which "dog" you would like! Then when your electronic dog "hears" a strange noise it starts barking!

Unlike a real dog, the super sensitive microphone has adjustable sensitivity to control what activates it (I mean makes it bark!). The "dog" produces 2 watts audio output at 4 ohms. This dog doesn't eat dry or moist dog food, instead it eats 2-8VAC or 9-12VDC! And it's a little guy: only 5.6" x 3"! You can order the handy power supply below. If you're not building the doggie into your own case or application you can also order the custom case set below. From Velleman. *(I believe our real watchdog has a bit more than 2 watts output!)*

K2655 Electronic Watch Dog Kit  
WCAH2851 Recommended Universal Case Set, Requires Drilling & Board Mounting  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$39.95  
\$6.95  
\$9.95



*Locomotive Breath!*

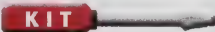
This cute little project authentically simulates the sound of a vintage steam engine locomotive and whistle! The unique design also provides variable "engine speed" as well as volume, and at the touch of a button the steam whistle blows! Includes a small 8 ohm speaker so all aboard when you're done building the kit!

Great for model railroads, sound effects for radio and stage, or just plain fooling around! Runs on a standard 9V battery (not included). Measures 3.9" x 3.3". From Velleman. *(Could have used this with my old original Lionel set that was given away and is now worth a fortune!)*

MK134 Steam Engine & Whistle Kit

\$11.95

## Electronic Multi-Tone Chime



- ✓ 1, 2, or 3 tone selectable!
- ✓ Adjustable tone and volume!
- ✓ Uses batteries or doorbell supply!

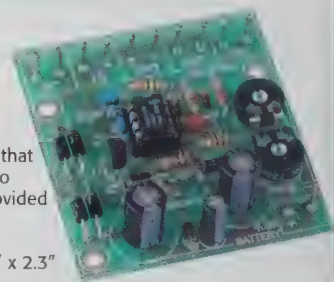
*Replace That Old Bell!*

This electronic chime generates three different available chime tones which can be selected by individual switch closures. Perfect for replacing that old doorbell buzzer or bell. It can also handle three separate door sounds! The IC design provides a clean audio output of a third of a watt into any standard 8 ohm speaker (not included). The circuit runs on 4.5VDC (three 1.5V batteries, not included) or 6 to 9VAC which is normally provided by the old doorbell transformers! Just use that if you have one.

Terminals are included for three separate switch contacts, speaker output, AC, and 4.5V battery connections. The compact board measures 2.1" x 2.3" and can easily be installed in any suitable location. For a great finished look, order the recommended case set below. From Velleman.

K6600 Electronic Multi-Tone Chime Kit  
G416 Recommended Case Set For K6600, Requires Drilling and Board Mounting

\$22.95  
\$8.95



## Digital Echo Chamber

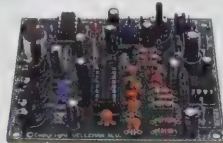
- ✓ Mic or line input!
- ✓ On-board mic and amplifier!
- ✓ Adjustable output level, echo, and feedback
- ✓ 40 Kb SRAM-low distortion and high quality output

*Great Effect Tool, Tool, Tool, Tool!*

One of the coolest effects yet! This little kit gives you professional echo chamber results at a fraction of the cost. It features line level inputs as well as an on-board mic for the input. It also features adjustable output gain, echo level, and feedback level to give you the customized sound you're looking for. Output is standard line-level for easy connection to your audio equipment. Runs on a standard 9V battery (not included).

MK182 Digital Echo Chamber Kit

KIT \$22.95



## Mad Blaster Warble Alarm

- ✓ Produces a startling warble alarm!
- ✓ 15W of power!
- ✓ Real attention getter!

*Our Original "Mad Blaster"*

Years ago we came out with this little kit that was quickly given the title "The Mad Blaster" because it produced a nasty and extremely loud warble tone. If you need to simply get attention, this little mini-kit producing a LOUD 15W ear shattering raucous racket is certainly the answer! Drives any 4-8 ohm speaker, but if you're looking for maximum volume use a horn type speaker. Drives any speaker, but a horn type provides the loudest sound. Runs on 9-12VDC, 12VDC producing the loudest "blast".

MB1 Mad Blaster Warble Alarm Kit

KIT \$9.95



## Classic Ding-Dong Chime

- ✓ Built-in push button!
- ✓ External switch input!
- ✓ Sounds just like the classic door bell
- ✓ Runs on 9-12VDC

*Is There Anybody In There?*

Just like the good old days of the mechanical door bell, this little kit reproduces the classic "ding-dong" sound through its built-in speaker. Plays it twice when triggered.

Use the built-in push button or wire external switches. Runs on 9-12VDC. Measures 2.75" x 3.8" x 1.2".

MK177 Classic Ding-Dong Chime Kit

KIT \$11.95



## Electronic Dripping Faucet

- ✓ Repeated "Plink" sound!
- ✓ A pleasant alarm!
- ✓ Like a drip in a bowl!
- ✓ Runs 4-9VDC

*Drip, Drip, Drip!*

We've been known for decades for coming out with little mini-kits that produce the weirdest sounds! Well, this one is a mere drip in the bucket! Somewhere between a dripping faucet and electronic "chime" in a new car! Just like a drip into a bowl of water! Use it where a unique sound is needed. Learn how a simple oscillator works too! Drives any speaker. Runs on 4-9VDC. *(That O-Ring kit won't fix this one!)*

EDF1 Electronic Dripping Faucet Kit

KIT \$14.95







## Electronic Siren

- ✓ Just like the police cars!
- ✓ 5W audio output!

*Here Come The Cops!*

The SM3 has been one of our most popular mini-kits for decades! It's a great starter kit, and the feeling of achievement is great when you connect a battery and speaker, push the button and hear an electronic police siren!

This little circuit exactly duplicates the upward and downward wail of an electronic police siren. A closure (typically a push button) generates the upward wail, releasing the switch makes it return downward.

Powerful 5 watt audio output drives any speaker but a "horn" type speaker provides the loudest results. Runs on 6-12 VDC, typically a small 9V battery. Great little kit to build into your projects or as a stand-alone fun generating siren!

SM3 Electronic Siren Kit \$7.95



## 10 Watt Electronic Siren

- ✓ Generates 4 separate siren sounds!
- ✓ Powerful 10 watt output!
- ✓ Great alarm alert generator!

*10 Watts Of Blaring Siren Sounds!*

Looking for a little more attention? This stepped up siren kit creates police, fire engine and ambulance sirens, as well as machine gun sounds. It's great for any sound effect applications and makes a perfect alert sound generator for an alarm system.

There will be no trouble hearing it with its whopping 10 watts of power! The output transistor even includes a heat sink to assure reliable operation at full power. Board mounted switches select the mode of operation. Runs on 3-9VDC. The board measures 2.57" x 1.72". From CanaKit. (Imagine scaring a car thief away with the sound of a machine gun!)



CK144 10W Siren Sound Effects Kit \$19.95  
UK144 10W Siren Sound Effects, Assembled & Tested \$25.95



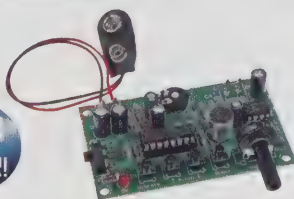
## Digital Voice Changer

- ✓ Alter your natural voice!
- ✓ Hi pitch, low pitch, vibrato, etc!
- ✓ Built-in microphone!
- ✓ Great for parties!

*You Aren't Who You Are!*

This voice changer kit is a riot! Just like the expensive units you hear the DJ's use, it changes your voice with a multitude of effects! You can sound just like a robot, you can change the pitch of your voice variably from low to high. For even more effect, add vibrato to your voice! Great for parties, recordings, bands, and the ever popular prank phone calls! Not that we endorse those incredibly funny prank phone call CD's, TV shows, and DVD's! Speaker output provides a powerful 1.5W output at 4 ohms. A line output is also provided to interface into your audio equipment... or telephone coupler! Runs on a standard 9V battery (not included). Board measures 3" x 1.8". From Velleman. (No, I only have all those CD's and DVD's for research purposes!)

MK171 Voice Changer Kit \$14.95



## Pink Noise Generator

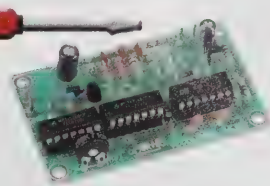
- ✓ Pseudo random digital noise!
- ✓ Adjustable from 30-100kHz!
- ✓ Optimize your acoustics
- ✓ Runs on 1-12VAC or 12-15VDC

*Think Pink!*

Pink noise is a great tool for testing and equalizing rooms (especially living/listening rooms) to make sure your sound system is giving you the best possible audio. Using this generator and a spectrum analyzer you can equalize your room to exacting specifications.

Why Pink noise? Unlike white noise, which has equal power per Hz, pink noise is filtered to give equal power per octave or per 1/3 octave. This means pink noise contains more of the frequencies that the human ear is attuned to, making it ideal for acoustic equalization! If desired this kit is easily modifiable to produce standard white noise as well. Dimensions: 2.8" x 1.7". From Velleman. (No, it won't play DSOTM!)

K4301 Pink Noise Generator Kit \$19.95



## Siren Sound Effects Generator

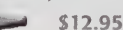
- ✓ Generates 4 separate sounds!
- ✓ Includes on/off switch!
- ✓ Includes PC mounted speaker!
- ✓ Runs on a standard 9V battery!

*This Little Kit Is A Riot!*

This fun little sound generator is more than a siren. Once assembled you can create your choice of 4 different sound effects: Police siren, fire brigade, emergency vehicle, and laser gun! Use the laser gun to go on a rampage and then just call in the police and fire vehicles to clean up your mess! Wow, how's that for catalog writing imagination!?

Variable pitch control allows you to customize the sound! Built-in PC board mounted speaker makes this kit ready to go when you're done. Runs on a standard 9V battery (not included). Measures 2.4" x 1.6". From Velleman. (Did I say imagination?!)

MK113 Siren Sound Effects Kit \$12.95



*Doesn't Crawl...  
Just As Annoying!*

With the incredible popularity of the "Electronic Dripping Faucet" kit (EDF1, page 18) we figured we had to come up with something equally unique! Well, this one is unique... to say the least!

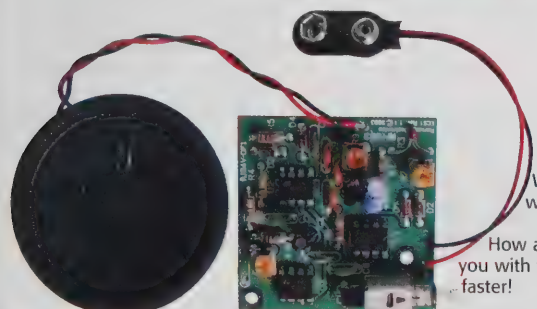
How about an electronic cricket? Sounds just like those little black critters that seem to come from nowhere and annoy you with their chirp-chirp! And just like the little critters, we made it sensitive to temperature so when it gets warmer, it chirps faster!

That's right, you can even figure out the temperature by the number of chirps it generates! Just count the number of chirps over a 15 second interval, add 40, and you have the temperature in degrees Fahrenheit! Not as fancy as a digital thermometer but much more unique! And unlike its little black predecessor, the ECS1 operates from around 50°F to 90°F! I don't think there are too many real crickets chirping away at 90°F! A unique thermistor circuit drives a few 555 ICs providing a variable chirp that is guaranteed to annoy everyone around you! But just watch their faces when you tell them the temperature outside!

Runs on 9-12VDC or a standard 9V battery (not included). Includes everything shown, including the speaker and battery clip, to make your cricket project a breeze. (If it drives you nuts you probably can squish it under your feet to make it stop... but that voids the warranty!)

ECS1 Electronic Cricket Sensor Kit

\$24.95



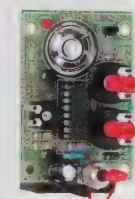
## Electronic Metronome

- ✓ Audible and visual indication!
- ✓ Adjustable volume and BPM!
- ✓ Built-in speaker!
- ✓ Compact size!

*Keep Perfect Time!*

For centuries musicians have used metronomes to keep a standard tempo, but mechanical wind-up metronomes are bulky and require winding. On the flip side, newer pre-assembled electronic metronomes tend to be pricey and cluttered with unnecessary features. This kit is perfect for anyone looking for a simple, compact, and inexpensive metronome that they can build themselves! Features controls for volume and beats per minute. The PC mounted speaker gives you a pleasant timing beat and a board mounted LED gives you visual indication for the "silent mode" of operation. Runs on a standard 9V battery (not included). From Velleman.

MK106 Electronic Metronome Kit \$10.95



## Electronic Chirping Cricket Sensor

- ✓ Chirps like a real cricket!
- ✓ Senses temperature and changes its chirp accordingly!
- ✓ You can actually determine the temperature and amaze your friends!



## Subminiature 20W Amplifier

- ✓ 20 Watts from one SMT package!
- ✓ Super efficient Class D design!
- ✓ Super clean output!
- ✓ No heat/heatsink concerns!

22 Watts..And NO Heat!



### SPECIFICATIONS

Audio Output:	20W max
Signal/Noise:	102dB into 8 ohms
Total Harmonic Distortion:	Less than 1%
Audio Input:	Line level 10K unbalanced
Gain Adjust:	4 input gain settings
Protection:	Auto short to ground shutdown Auto short to Vcc shutdown Auto short shutdown Auto thermal shutdown
Power Input:	8-18 VDC, 2.1mm connector (18VDC for full rated output)
Dimensions:	2.6" square, 1.43" diameter

brought out to convenient board mounted screw terminals. The amplifier has selectable gain of 12dB, 18dB, 23.6dB, and 32dB. This is selected via board jumpers. A amplifier shutdown terminal is also brought out to the Euroblock. You can use that to switch the amplifier on/off by taking it to ground.

The UAM2 runs on 8-18VDC, and is brought out to a standard 2.1mm power jack AND two terminals on a Euroblock. Therefore if you're hardwiring it, you don't need to use a plug from a separate power supply! Full rated output will be achieved at 18VDC, but will operate all the way down to 8VDC! And that means it works great in a vehicle at 12VDC! Just think of the applications!

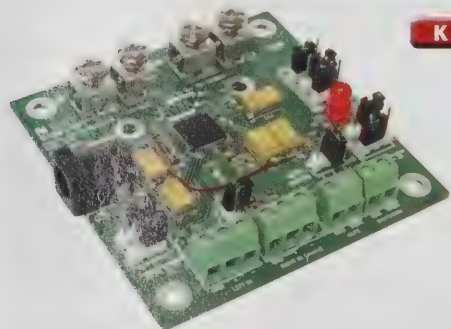
The entire amplifier board is 2.6" square and can be easily installed inside your speaker enclosures, or other components. We made it even easier with a unique board that can be "snapped" out into a small circle to be double face tape mounted directly to the back of a speaker! And however or wherever it's mounted there is no concern for heat, ventilation, or the need for a heatsink!

This IS a Surface Mount (SMT) kit, so you will need fine tweezers, magnifier, and a decent fine tip soldering iron! See assorted tools and accessories in the tools section. (Who ever imagined 20 watts in a single SMT device; I still remember fighting with vacuum tubes to get 20 watts!)

**UAM2** 20 Watt Audio Amplifier Module Kit  
**SPS18** 18VDC Switching Power Supply, 1.7A

\$52.95

\$39.95



42 Watts, 87% Efficient,  
No Heat, All On A 2 1/2" Board!

## Subminiature 42W Stereo Amplifier

- ✓ The EXTREME big brother of the UAM2 in stereo!
- ✓ 2 independent 21W amplifiers in one SMT package!
- ✓ Super efficient Class D spread spectrum design!
- ✓ Built-in click and pop suppression!
- ✓ Balanced & unbalanced hi-Z inputs!
- ✓ Logic level mute and shutdown functions!
- ✓ Selectable gain from +22dB to +36dB!
- ✓ Built-in thermal protection!
- ✓ Programmable device shutdown with LED indicator!
- ✓ Runs cool, no heat sink required!
- ✓ All this on a 2 1/2" square board!

### SPECIFICATIONS

Audio Output:	2 x 21W stereo mode, 8 ohms 1 x 42W mono mode, 4 ohms
Signal/Noise:	91dB into 8 ohms, 22Hz-22kHz
THD+N:	0.1%
Audio Input:	Balanced, unbalanced, hi-Z
Gain Adjust:	Jumper settings, +22dB, +25dB, +29.5dB, +36dB
PSRR:	90dB at 1kHz
Efficiency:	Up to 87%
Protection:	Short circuit, thermal overload Programmable thermal flag Auto short shutdown Auto thermal shutdown
Power Input:	10-18 VDC, 2.1mm connector (18VDC for full rated output)
Dimensions:	2.5" square

When we released the UAM2, it became the most popular audio amplifier product in our history. The novel Class D design, providing a clean 20 watts in such a tiny package, set the hobbyist world on fire! And that's a pretty tough task when it didn't even produce any heat at its full output! Because of the popularity of the UAM2, we put the engineering staff into overdrive and the result is the UAM4!

The UAM4 is the big brother to the extremely popular UAM2. It uses the latest spread spectrum amplifier technology to bring you clear, crisp, high-power audio without any of the heat which is normally associated with such an amplifier. It's extremely clean Class D design produces two independent 21 watt outputs! This can also be bridged to an extremely efficient (87%!) single channel (mono) 42 watt amplifier.

And at 42 watts, you're probably already wondering about the heatsink requirements to dissipate the heat, right? Stop wondering, there's no heat, so there is no heatsink required! And all that power is generated in a single SMT device the size of your thumbnail on a small 2 1/2" square board! For a quick tutorial on Class D amplifiers, see the description of the UAM2 above!

The high impedance input is designed to use your choice of either a balanced line input or an unbalanced signal source using easy to connect Euroblock terminals. No more concerns about having a matching input connector or plug or whether it's balanced or unbalanced! Audio speaker output is brought out to simple screw terminals. It doesn't get much easier than that. Logic connections to ground are also provided to mute and/or shut down the amplifier. You can also enable the built-in over temperature signal to activate one of these controls automatically!

Easy to use board jumpers offer selectable gain of +22dB, +25dB, +29.5dB or +36dB to match your input levels. Board jumpers also enable protection and shutdown options as well as stereo/mono/bridge mode. The amplifier also features built-in click and pop suppression to protect not only your ears and sanity, but your speakers and equipment! Power input for maximum rated output is 18VDC at 2.64A. Input voltage can be reduced to a minimum of 10VDC with reduced output. If required, use our switching power supply below which provides 18VDC at 3.3A with an input of 100-240VAC, 50/60 Hz.

As a result of customer requests, we have also designed this amplifier circuit into a complete 42 watt stereo amplifier system! Check out the UAM4SYS on the next page, it's a complete system amplifier in a compact aluminum case. Gives you the performance of a component system amplifier with no heat and in a compact form factor!

If you're looking for an incredible stand-alone stereo (or mono) amplifier to build into your equipment, speakers, or application, the UAM4 is the latest and the greatest! Remember, this is an SMT kit so you will need tweezers, a magnifier, some pretty good eyes, and a fine tip soldering iron or station. Check out SMT related tools in our Tools section. (Think back to the components, power supplies, and heatsinks it used to take to get 40 watts!)

**UAM4** 42 Watt Audio Amplifier Module Kit  
**SPS183** 18VDC, 3.3A Switching Power Supply, 100-240VAC, 50/60Hz

\$69.95

\$59.95





## 42W Universal Stereo Amplifier System

- ✓ 42 watt class D amplifier spread spectrum design!
- ✓ Highly efficient heat-free operation!
- ✓ Built-in click and pop suppression!
- ✓ 0.1% distortion!
- ✓ Balanced and unbalanced audio inputs!
- ✓ All DC digital controls for noise-free operation!
- ✓ Selectable pre/post process line outputs!
- ✓ Short circuit proof!
- ✓ Operates on 12-18VDC at a mere 3.3A!
- ✓ Compact and attractive shielded aluminum case!

*The Ultimate High-Tech  
Super Efficient Amplifier Solution!*

**Wired & Tested**

**KIT**

First we designed the UAM2, the extremely popular audio amplifier module that provides 20 watts of clean audio with virtually no heat... or heatsink! People loved it, and "stuck" them everywhere, from the back of speakers to inside their custom equipment to drive speakers. Last year saw the introduction of the "big

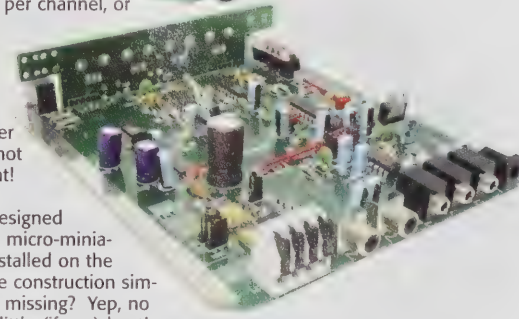
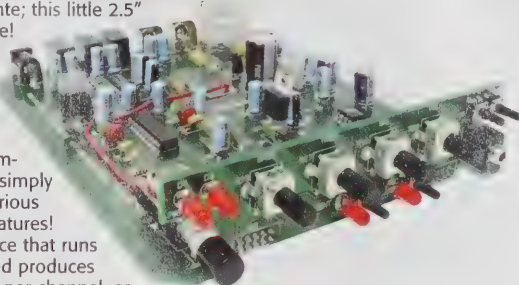
brother" of the UAM2, our UAM4. The UAM4 upped the ante; this little 2.5" board provided 42 watts of stereo from a single SMT device! Just like the UAM2, people fell in love with it, and then they suggested we put together a complete audio amplifier system based on the UAM4 design. Their requests seemed like a great idea, so the UAM4SYS was born!

Our goal was to make a universal amplifier that is both compatible with anyone's system requirements, and could be simply plugged in and used. Sounds simple, but it took some serious design work, and resulted in a lot of seriously awesome features! Like the UAM4, the amplifier is based on a single SMT device that runs in class D, which means it's highly efficient (up to 87%) and produces very little heat. It provides stereo audio power of 21 watts per channel, or 42 watts total audio power!

Easy-to-use board jumpers offer selectable gain of +22dB, +25dB, +29.5dB or +36dB to match your input levels. Board jumpers also enable protection and shutdown options as well as stereo/mono/bridge mode. The amplifier also features built-in click and pop suppression to protect not only your ears and sanity, but your speakers and equipment!

Construction wise, the entire amplifier assembly is nicely designed around a main board and a front panel control board. The micro-miniature SMT amplifier and related SMT components are pre-installed on the main board. The remaining parts are through-hole to make construction simple. Look at the front and rear view of the boards... what's missing? Yep, no heatsinks! The amplifier runs 87% efficient, and produces little (if any) heat!

The high impedance input is designed to use your choice of either a balanced line input or an unbalanced signal source. A single stereo 3.5mm input can be used for a single stereo unbalanced input (i.e. a typical computer audio stereo cable) and there are separate 3.5mm left and right audio inputs that can be used as balanced (TRS) or separate unbalanced inputs. It's your choice!



SPECIFICATIONS	
Audio Output:	2 x 21W stereo mode, 8 ohms 1 x 42W mono mode, 4 ohms
Signal/Noise:	91dB into 8 ohms, 22Hz-22kHz
THD+N:	0.1%
Audio Input:	Balanced, unbalanced, hi-Z
Gain Adjust:	Jumper settings, +22dB, +25dB, +29.5dB, +36dB
PSRR:	90dB at 1kHz
Efficiency:	Up to 87%
Protection:	Short circuit, thermal overload, Auto short shutdown Auto thermal shutdown
Modulation Scheme:	Spread-spectrum (SSM) Clock frequency 200kHz $\pm$ 4kHz
Line Outputs:	Selectable pre/post processing, dual RCA unbalanced
Headphone Out:	64 step digital level control with memory, 3.5mm front panel
Speaker Out:	Spring clamp terminal block, 14- 28AWG, rear panel
Front Panel Controls:	Volume, bass, treble, balance, dig- ital DC controls
Mute:	Digital push button with LED
Loudness:	Digital push button with LED
Power:	On/off with LED
Over Temp:	LED indicator
Audio Input:	3.5mm stereo unbalanced 3.5mm balanced/unbalanced each channel, 10K impedance
Case:	Anodized aluminum
Power Supply:	12VDC to 18VDC, 3.3A at 18VDC, 2.1mm center positive rear panel
Dimensions:	5.28" x 6.2" x 1.2" board 5.6" x 6.6" x 1.6" case
Weight:	1.24 lbs

Speaker outputs are provided on the rear panel via spring clip terminal blocks compatible with 14-28AWG speaker wire. Separate left and right line outputs are also provided on the rear panel via RCA unbalanced connectors. Best of all, you can select these outputs to be either pre or post processing!

Front panel controls are all DC or digital, giving you noise-free operation. No noisy/touchy volume pots ever again! Volume, bass, treble, and balance controls are provided to let you configure the audio exactly to your personal preferences. In addition, mute and loudness on/off's with matching LED indicators are provided on the front panel.

We're especially proud of the headphone output circuit on the UAM4SYS. The standard 3.5mm stereo headphone jack on the front panel is controlled with digital up/down push button controls. This gives you 64 steps of audio level, and even stores your last setting so your headphone level will remain the same! The headphone jack is also pre-mute to allow monitoring while the speakers are muted. It also makes it possible to have a "single master" unit with remote amplifiers daisy-chained or bridged together with the ability to turn one off individually without disturbing the others downstream. That's just one of the many systems you can implement with the UAM4SYS - the only limit is your creativity and imagination!

An over-temp LED is provided on the front panel to indicate problems like shorted outputs. The amplifier also detects this condition and automatically shuts down for protection until the short is cleared. Considering all these features, you may be surprised to learn that we managed to fit the whole thing in a compact anodized aluminum case that is a mere 1.6" high! It makes an attractive addition to any equipment stack or computer setting.

If you're looking for a great way to properly drive speaker monitors from the line out of your computer, the UAM4SYS is perfect. One single stereo input cable between the computer and the UAM4SYS, a pair of decent nearfield monitor speakers, and you're all set. This is great for people that use their PC for audio and video editing. It's also the perfect choice for anyone looking for a high quality amplifier for an iPod or MP3 player.

Input power is 12-18VDC. At 18VDC and providing maximum power output, the high efficiency amplifier only draws 3.3A! The broad power input range also makes it perfect for automobile use. Just plug it into an accessory power plug (formerly known as a cigarette lighter plug!). A lot of customers use their own power supplies or use the UAM4SYS in a mobile environment, so we do not include a power supply. The optional SP5183 is a compact desktop switching power supply that provides 18VDC to produce the maximum output power of the amplifier. It has a wide input range of 100-240VAC so it's compatible with domestic or international mains. (If you order the factory assembled and tested version, we include the power supply so you can plug it in and crank it up!) The complete amplifier measures 5.6" x 6.6" x 1.6". If you've been looking for the perfect audio amplifier, look no further! (My daughter's primary system, the UAM4S, her iPod and iPhone, and several gigs of Pink Floyd cranking away!)

UAM4SYS	42 Watt Stereo Amplifier Kit
UAM4SYSWT	42 Watt Stereo Amplifier, Factory Assembled & Tested, With SP5183 Power Supply
SP5183	18VDC, 3.3A Switching Power Supply, 100-240VAC, 50/60Hz

\$169.95
\$249.95
\$59.95







## 2x30 Watt Audio Power Amplifier

KIT

- ✓ Dual channel, 30W max per channel!
- ✓ Latest IC circuitry, fully protected
- ✓ Includes heatsink
- ✓ Perfect drop-in power amplifier

### SPECIFICATIONS

Audio Output:	2x30W max (2x15W RMS)
Signal/Noise:	98dB into 4 ohms
Total Harmonic Distortion:	Less than 0.07%
Channel Separation:	70dB
Frequency Response:	7Hz to 60kHz
Audio Input Sensitivity:	300mV/150k ohm
Protection:	Transient suppression on/off Auto overload protection Auto short circuit protection Auto thermal shutdown
Power Input:	2x12V AC/DC @ 50W/2A
Dimensions:	2.6" square, 1.43" diameter

This unique small audio power amplifier is designed around the TDA1521 IC. The IC is thermal, short circuit, and overload protected for reliable operation. One of the neat features of this amplifier is that it needs no additional rectifier and smoothing filter because it can also run on AC!

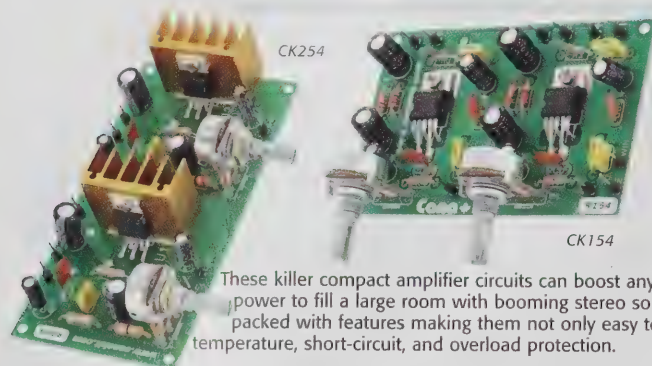
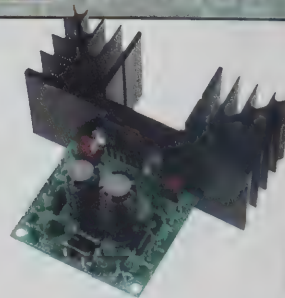
The small board and custom heatsink design make installation and connection a breeze. Just connect your inputs, your speakers (4 or 8 ohm) and power. Don't worry about overloads, or shorts on your outputs because it has automatic protection.

In addition, transient suppression is switchable on/off as desired. If you're looking for a sweet little inexpensive stereo amplifier, this is for you! Board, less heatsink, measures 2.8" x 2". From Velleman.

K4003

2x30 Stereo Audio Power Amplifier Kit

\$27.95



These killer compact amplifier circuits can boost any MP3 or portable player into a stereo system with enough power to fill a large room with booming stereo sound! Designed around the TDA2003 IC they also come packed with features making them not only easy to integrate to your equipment but ultra reliable with built-in temperature, short-circuit, and overload protection.

They come in two versions: 14 watts providing 7 watts per channel stereo, and 20 watts providing 10 watts per channel stereo. Input connections are a breeze with both low and high impedance inputs that can be connected to virtually any stereo audio source! Give your audio a kick in the butt! From CanaKit.

CK154	14W Stereo Audio Amplifier Kit
UK154	14W Stereo Audio Amplifier, Factory Assembled & Tested
CK254	20W Stereo Audio Amplifier Kit
UK254	20W Stereo Audio Amplifier, Factory Assembled & Tested

## 14/20 Watt Stereo Audio Amplifier

KIT  
Wired & Tested

- ✓ Dual onboard volume controls
- ✓ 2x TDA2003 Integrated Circuits
- ✓ Available in 14W and 20W versions

### CK154 SPECIFICATIONS

Supply Voltage:	12-16VDC / 1A
Input Sensitivity:	100mV / 20K Ohm
Output Power:	2 x 7W Max @ 4 Ohm
Frequency Response:	40Hz to 15KHz (-3dB)
Dimensions:	2.0" x 1.54"

### CK254 SPECIFICATIONS

Supply Voltage:	12-18VDC / 1-2A
Input Sensitivity:	100mV / 20K Ohm
Output Power:	2 x 10W Max @ 4 Ohm
Frequency Response:	40Hz to 15KHz (-3dB)
Dimensions:	4.33" x 2.18"

\$25.95

\$33.95

\$27.95

\$35.95

## 2x5 Watt Stereo Audio Amplifier

KIT

Wired &amp; Tested

- ✓ Great for kiosk applications!
- ✓ Low harmonic and crossover distortion!
- ✓ Short circuit and overload protected!
- ✓ Custom silk screened enclosure available!

### SPECIFICATIONS

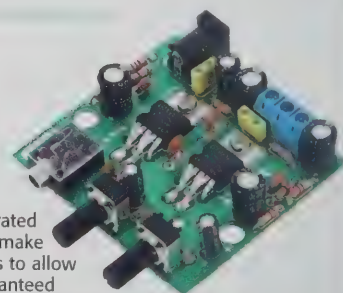
Supply Voltage:	8-16VDC / 0.5-1A
Output Power Per Channel (w/15V Supply)	
Music Power:	> 5W @ 4 Ohm
RMS Power:	3.5W @ 4 Ohm / 2W @ 8 Ohm
Input Sensitivity:	75mV / 20K Ohm
Frequency Response:	40Hz to 15KHz (-3dB)
Dimensions:	2.34" x 2.24"

CK560	10W Stereo Audio Amplifier
UK560	10W Stereo Audio Amplifier, Factory Assembled & Tested
BX560	Custom Enclosure

\$27.95

\$35.95

\$9.95



*The Handiest Little Stereo Amp!*

This compact 10W (5W + 5W) stereo amplifier is based on two TDA2003 Integrated Circuits. The small size, as well as the low harmonic and cross-over distortion, make it great for kiosks! Also well suited for connection to your portable MP3 players to allow them to be connected to standard speakers. Completely safe operation is guaranteed thanks to protection against DC and AC short circuits, thermal over-range, load dump voltage surge up to 40V and open ground conditions. Comes with a 3.5mm stereo audio input jack, plus screw-on terminals for speaker outputs!. From CanaKit.

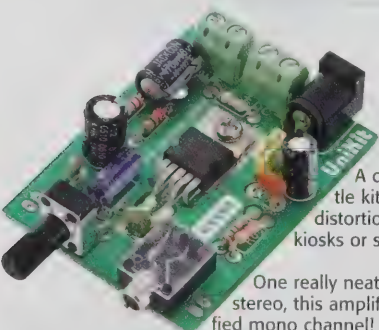
KIT

Wired &amp; Tested

*The Perfect Kiosk Or Display Amplifier!*

A compact mono 5W amplifier based on the TDA2003 Integrated Circuit, this little kit packs a punch! Thanks to its small size and low harmonic and cross-over distortion, this kit is ideal for all kinds of audio amplification applications, especially kiosks or similar applications where a small amp is required!

One really neat feature, considering that pretty much all audio sources these days will be stereo, this amplifier provides stereo inputs and then mixes both channels into a single amplified mono channel! Sure beats the good old days of plugging just one side in and hoping for the best! Completely safe operation is guaranteed due to protection against short circuits, thermal over-range, load dump voltage surges and open ground situations. It comes with a built-in 3.5mm stereo audio input jack plus screw terminals for the speaker output for easy wiring! From CanaKit.



## 5W Audio Amplifier

- ✓ Great for kiosk applications!
- ✓ Short circuit and overload protected!
- ✓ Custom silk screened enclosure available!

### SPECIFICATIONS

Supply Voltage:	8-16VDC / 0.5A
Output Power (w/15V Supply)	
Music Power:	> 5W @ 4 Ohm
RMS Power:	3.5W @ 4 Ohm / 2W @ 8 Ohm
Input Sensitivity:	75mV / 20K Ohm
Frequency Response:	40Hz to 15KHz (-3dB)
Dimensions:	1.74" x 2.26"

\$17.95

\$24.95

\$9.95

\$9.95

CK550	5W Audio Amplifier
UK550	5W Audio Amplifier, Factory Assembled & Tested
BX550	Custom Enclosure
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency



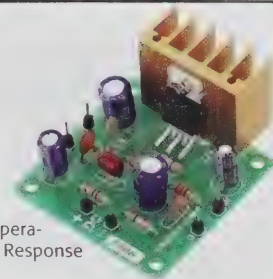
## 10 Watt Audio Amplifier

KIT

Wired & Tested

- ✓ 10 watts maximum output power
- ✓ AC and DC short circuit protection
- ✓ Thermal overload protection
- ✓ Includes gold-anodized heat sink

*Compact and Powerful!*



This compact audio amplifier is perfect as a stand-alone amp or as a component in your custom project. Using the popular TDA2003 Integrated Circuit, it can deliver more than 10W of music power into a 4 Ohm speaker (7W R.M.S. / 4 Ohm or 4W R.M.S. / 8 Ohm). It also incorporates a temperature compensation circuit and is fully protected against the possibility of overload or short-circuit. Input Sensitivity is 75mV at 20K Ohm, Frequency Response is 40Hz to 15KHz (-3dB), and Supply Voltage is 12-18 VDC at 500mA to 750mA. Board Measures 1.80" x 1.66". From CanaKit.

CK003 10 Watt Audio Amplifier Kit  
UK003 10 Watt Audio Amplifier, Factory Assembled & Tested

\$12.95  
\$17.95

KIT

Wired & Tested

## 10W Audio Amplifier w/Mic Pre Amp

*Boost That Microphone!*

- ✓ 10 Watts of power in a tiny kit!
- ✓ Board-mounted microphone jack!
- ✓ Short-circuit and overload protected!
- ✓ Includes gold-anodized heat sink!

### SPECIFICATIONS

Supply Voltage:	12-15VDC / 0.5A
Power Consumption:	< 45mA (stand-by)
Input Sensitivity:	Aux -75mV / 20K Ohm Mic - 2 to 5mV (dynamic)
Output Power Using 15VDC Supply:	Music Power: >10W @ 4 Ohm RMS Power: 7W @ 4 Ohm or 4W @ 8 Ohm
Frequency Response:	40 Hz to 15 KHz (-3dB)
Maximum Distortion:	0.5%
Dimensions:	4.24" x 2.27"

Built around the popular TDA2003 Integrated Circuit, this powerful and compact audio amplifier offers the advantage of a built-in microphone pre-amplifier in conjunction with a 10 watt mono audio amplifier - all on the same PC board!

The microphone pre-amplifier includes a PC board mounted microphone jack, and the whole package provides great power with just a 12V DC supply. And even with a small amplifier like this, don't worry about overdriving it or shorting the outputs. It features automatic output short-circuit and overload protection! From CanaKit.

CK161 10W Audio Amplifier w/Mic Pre Amp Kit  
UK161 10W Audio Amplifier w/Mic Pre Amp, Factory Assembled & Tested

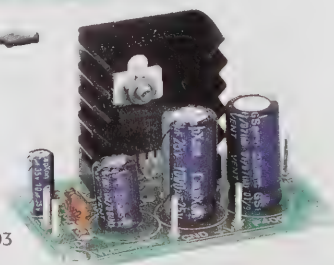
\$22.95  
\$29.95

## 7 Watt Audio Power Amplifier

- ✓ 7 Watts output maximum power
- ✓ Overload and short circuit protected
- ✓ Includes heatsink

*The Easy Audio Amplifier!*

KIT



A super amplifier to use stand-alone or as part of a system. The small circuit board and heatsink make it easy to integrate this into any of your applications requiring a good amplifier. 7 watts maximum audio output (3.5W RMS into 4 ohm) provides a Total Harmonic Distortion of .05% with a Frequency Response between 20Hz and 20kHz. Input sensitivity is 40mV at 150k ohm.

Supply voltage is 8 to 18VDC at .5A (15VDC for rated output). Automatic protection for shorted output and overload. Uses the newest TDA2003 IC for ultimate reliability. Includes the small but efficient heatsink shown. Board measures 2.2" x 1.4". From Velleman.

CK4001 7 Watt Audio Power Amplifier Kit

\$14.95

KIT

Wired & Tested

*Yes! Thick Film Hybrid In a Hobby Kit Amplifier!*

## 50W Hybrid Power Stereo Amp

- ✓ Huge power, tiny kit!
- ✓ Includes volume and balance controls
- ✓ Screw terminals for power and speaker connections
- ✓ Runs on 14-33VAC

The heart of this beauty is the STK4392 Thick Film Hybrid integrated circuit. This device really cranks out the power, to the tune of 2x25 watts RMS power! The hybrid is mounted on a gold anodized super-efficient heat sink to keep it cool even while it's cranked.

An on-board power supply is included so you simply need to drive it with a 24-32VAC transformer. High quality volume and balance pots are front board mounted to accommodate any custom panel installation. Stereo inputs are brought out on the board via dual RCA connectors making it a breeze to connect to any consumer audio output jacks. Finally, screw terminal blocks are used for speaker outputs to insure a proper connection.

Now comes the best part, all this is mounted on a single board that measures 5" x 2.3"! Simply amazing! From CanaKit.

### SPECIFICATIONS

Supply Voltage:	24-32V AC Transformer 1-2A
Input Sensitivity:	300mV
Output Power (32VAC):	Music Power: 2x38W @ 4Ohm RMS Power: 2x25W @ 4 Ohm
Max Distortion:	< 0.3%
Frequency Response:	20Hz to 30KHz
Dimensions:	5.01" x 2.31"

CK260 50W Hybrid Power Stereo Amp Kit  
UK260 50W Hybrid Power Stereo Amp, Factory Assembled & Tested

\$49.95  
\$59.95

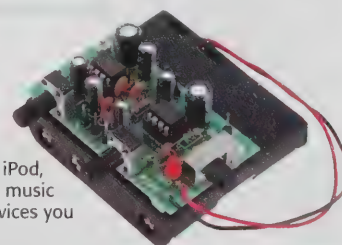
## Mini MP3 Player Stereo Amplifier

KIT

Wired & Tested

- ✓ Boost your portable music power!
- ✓ Runs on 4 standard "AA" batteries
- ✓ Includes cable with stereo plug

*Crank Up The Audio On That New iPhone You Waited In Line For!*

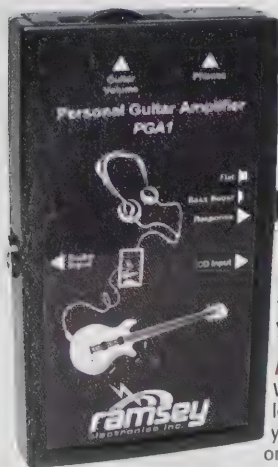


This kit gives you a very compact mini stereo amplifier that can be connected to the headphone jack of any standard audio source such as an iPod, iPad, iPhone or other portable MP3 player. With a circuit based on two LM386 low-voltage power amplifiers, the CK122 provides up to 1W of music power for each channel! Includes cable with stereo plug as well as a battery holder. It even includes an on/off switch, unlike some of the devices you may connect it to! Output Power: 2 x 0.5W Max @ 4 Ohm. Dimensions: 2.50" x 1.40". From CanaKit.

CK122 Mini MP3 Player Amplifier Kit  
UK122 Mini MP3 Player Amplifier, Factory Assembled & Tested

\$19.95  
\$25.95





Wired &amp; Tested

KIT

**Crank It Up Baby...  
Crank It!**



### CRANK UP THE AUDIO AS LOUD AS YOU NEED!

So you're a guitar player, and you live in an apartment... need we say more?! You would love to plug into your 100 watt HiWatt (my favorite!) amplifier and let it crank, but the neighbors probably wouldn't share your enthusiasm! The PGA1 was designed to give you hours of enjoyment playing your favorite electric guitar while isolating your family, friends, and neighbors from your music and your passion.

### FOR USE WITH ALL TYPES OF GUITARS!

Whether you use an acoustic electric, electric, or bass guitar, the PGA1 gives you an adjustable volume output to your favorite headphones. Unlike a lot of practice amps, the PGA1 has a special bass boost to enhance bass guitar use. One practice amp for all your guitars! If you want to practice to your favorite music, the PGA1 has a standard style audio input to play to your favorite music! Just plug in your Walkman style CD player, MP3 player, or even the headphone output on your mixer board and you'll hear both your music source and your guitar in your headphones!

### ONE WATT OUTPUT!

The PGA1 uses a powerful LM386 power amplifier to provide one watt of power to your headphones or even a small speaker! It gets even better...use the PGA1 as a cheap and easy direct inserter box to match your guitar into an aux input of a stereo receiver amplifier or PA amplifier! It sounds great! A standard 1/4" audio input connector is used for your guitar input, matching your standard guitar cables. A top mounted on/off/volume control adjusts the headphone output level through the full range. The small belt clip pocket size device runs on a standard 9V battery (not included). An LED indicates power-on and relative battery condition. The attractive compact case measures 4.5"H x 2.7"W x 1.1"D and can be worn on your belt or carried in your pocket. Available in kit to "learn as you build" or factory assembled and tested to get playing right out of the box! (Along with a cable, I always keep one of these in the case of my Black Strat... and the neighbors are happy about that!)

**PGA1** Personal Practice Guitar Amplifier Kit  
**PGA1WT** Personal Practice Guitar Amplifier, Factory Assembled & Tested

\$64.95

\$99.95

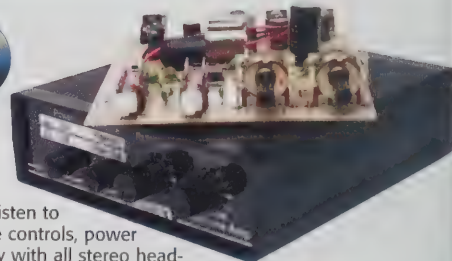
## Stereo Headphone Amplifier

- ✓ Make your headphones sound GREAT!
- ✓ Use with table radios, CD players, tuners, and more
- ✓ Great as a basic preamp for any line level signal

KIT

Wired &amp; Tested

**No Headphone Jack?  
NO Problem!**



So, you buy a really good radio or CD player, go to plug in your headphones, and there isn't a headphone jack! You find a line level jack, plug in your headphones, and they sound terrible. Sound familiar?

Most good quality gear lacks an earphone output, or if there is one, it is woefully poor quality. We developed this kit to help us listen to our mixers, reverbs, voice recorders and other audio goodies. We took a pair of LM-386 250 mW audio amplifiers, added volume controls, power supply and a handy, switchable, high-cut filter. A common 1/4" stereo earphone jack is used for the output - assuring compatibility with all stereo headphones - and RCA phono jacks accept standard line level input signals. There's plenty of volume and of course, the "Fi" is quite "Hi". Available in money saving kit form or fully wired and tested. Runs on 9 to 15 VDC. Includes an attractive matching case measuring 5"W x 1 1/2"H x 5 1/4"D. (Did you know the leading and most well known manufacturer of high-end table radios recommends the SHA1 to all of their customers?!)

**SHA1C** Stereo Headphone Amplifier Kit With Case  
**SHA1WT** Factory Assembled & Tested SHA1 With Case And Power Supply  
**AC121** 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$34.95

\$69.95

\$9.95



KIT

Wired &amp; Tested

**The New Generation  
Stereo Headphone  
Amplifier!**

A few years ago we designed the SHA1 stereo headphone amplifier to provide an audiophile quality headphone signal from a radio or amplifier that only had a line output. The success was overwhelming! As described in previous catalogs and on our website, the largest manufacturer of high quality table radios recommended the SHA1 to their customers who wanted to use headphones with their radio.

Well, it's been a couple of years and the need has been proven so we decided not to rest on our laurels with the success of the SHA1. We put our engineers to work, asking them questions like... what if a band wanted multiple headphones with separate level controls? And what about controls... how about the ability to tailor the audio characteristics to each user's preferences? What about multiple headphones from just one unit? When they got tired of all our questions they said "OK... you've got it, the new SHA2... the next generation headphone amplifier kit!"

Standard 3.5mm stereo audio headphone connectors are used for both looping input and dual outputs for simple Walkman style headphones. That was decided when I recently bought a hundred dollar set of Sony professional headphones that had the 3.5mm plug on them and an included 1/4" adapter. I figured it's time to concede to 3.5mm! And before you ask, we provide a dual RCA to 3.5mm stereo input cable with the SHA2 to match up with your standard unbalanced RCA line out connectors!

From there LM386's and LM1036's are used for audio processing providing nearly 1 watt of output to the normal 4-40 ohm headphones or speaker circuits. The loop-through inputs are properly isolated to prevent ground loop and hum problems when daisy chained or used in multiples. The dual outputs are great for that other person that just has to listen in too! We covered it all with the SHA2!

Runs on a built-in standard 9VDC battery and also has a rear power jack for 12-20VDC if you don't want to bother with a battery! If you're looking for a great headphone amplifier to simply listen to the line output of a radio, CD player, tape player, or receiver, our proven SHA1 is the answer. BUT... if you're looking for multiple outputs, looping inputs, daisy chained amplifiers, and bass, treble, and loudness control, then try the SHA2, the next generation stereo headphone amplifier! Like the SHA1, it includes an attractive matching case measuring 5"W x 1 1/2"H x 5 1/4"D.

**SHA2** Super Stereo Headphone Amplifier Kit With Case  
**SHA2WT** Factory Assembled & Tested SHA2 With Case And Power Supply  
**AC121** 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$64.95

\$109.95

\$9.95

## Super Stereo Headphone Amplifier

- ✓ The next generation headphone amp!
- ✓ Separate volume, treble, bass, balance and loudness controls!
- ✓ Signal level clipping indicator LED!
- ✓ Stereo loop-through for multiple feeds with separate controls
- ✓ CD quality audio!



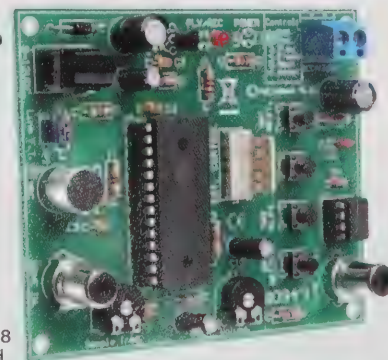
## Digital Audio Record & Playback Module

**NEW!**

**KIT**

- ✓ Record and playback up to 8 minutes of audio messages!
- ✓ On-board sensitive electret condenser microphone!
- ✓ Unbalanced line input, line output, and half watt speaker output!
- ✓ Adjustable sample rates!
- ✓ Built-in pushbutton controls plus remote control capability!
- ✓ Small size to fit your application!

*Record and Playback  
Up to 8 Minutes!*



Whether you're an electronic hobbyist looking for a sound effects source for a holiday decoration, a museum or exhibitor looking for a message "loop" for displays and kiosks, or a private broadcaster looking for an inexpensive means to store and playback IDs and spots, this little board has you covered!

Messages can be recorded with a highly sensitive built-in electret condenser microphone. Just push the record button and record up to 8 minutes of voice quality audio. If you need higher music quality response, you can adjust the sample rate with the on-board control and record nearly 3 minutes at music quality. In addition to the built-in mic, you can also plug in a standard unbalanced line level audio input from a mixer, MP3 player, or other common audio equipment. The board has a 8 ohm speaker output rated at 500mW as well as a standard unbalanced line level output for connection into your own audio or transmitter equipment.

Operation is simple with 4 PC mounted touch switches for Record, Play, Erase, and Next. The board can also be remote controlled with external switches, relay contacts, or open collector outputs. Board measures 4.3" x 2.3" x 1" and runs on 9-12VDC at 100mA. Order our AC121 regulated power supply for a direct plug-in power source.

**K8094** Digital Audio Storage Module Kit  
**AC121** 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level V Efficiency

**\$32.95**  
**\$9.95**

## Super Snoop Amplifier

- ✓ High sensitivity, long distance listening!
- ✓ Powerful 2W audio output!

*Super High Gain!*



Here's a super sensitive amplifier that will pick up a pin drop at 15 feet (with a proper microphone attached)! It's also an ideal general purpose amplifier to simply boost the signal level of any audio source. The device is rated 2 watts audio output which relates to lots of gain!

When wired for high gain, makes an excellent room monitor. Simply connect one of our MC1 mini electret condenser mics. Likewise, this little amplifier is perfect to build a "big ear" high gain mic to listen in on the "wildlife" both in the field and in the city! Just like the ones the networks use at football games to listen to the players! Runs on 6-15VDC at 500mA. Drives any speaker or coupled headphones and runs on a standard 9V battery or anywhere from 9-15VDC. The tiny board measures 1 1/2" x 1/2" x 1 1/2".

**BN9** Super Snoop Amplifier Kit **KIT** **\$9.95**

## Mini Electret Condenser Microphone

- ✓ Extremely sensitive!
- ✓ Built-in FET preamplifier!
- ✓ Super small size, great fidelity!
- ✓ Runs on 3 to 15 VDC

*You CAN Hear Me Now!*

**TOP  
SELLER!**



This little subminiature condenser microphone element kit is great as a replacement microphone in tape recorders, walkie-talkies, radios, CB microphones, telephones, and other audio products. Extremely sensitive element has a built-in high gain FET preamplifier. A lot of customers use these microphone elements together with our BN9 Super Snoop Amplifier to build super sensitive "electronic ears".

The preamp is powered from 3 to 15 VDC on the audio line to the microphone. The kit includes a coupling capacitor and current limiting resistor to make the connection to your circuit a breeze! Comes complete with detailed connection details, schematic, and diagrams. The microphone element measures 3/8" diameter x 3/8" high! And THAT is small!

**MC1** Mini Electret Condenser Mic **KIT** **\$3.95**



**TOP  
SELLER!**

**KIT**

*What Did He Say?  
You'll Find Out!*

## Stereo Ear Super Stereo Amplifier

- ✓ Super high gain, amplifies sound 50 times!
- ✓ Listen in stereo directly with headphones!
- ✓ Dual directional stereo microphones included!

The "Stereo Ear" is one of the neatest and handiest ultra-high-gain audio amplifier you will find! And when we say high gain, we mean it! This little amplifier boost audio 50 times, and it does it in stereo! There are two high sensitivity electret condenser microphones mounted on the board, placed at 45 degree angles to give you maximum stereo separation.

The little amplifier is self-contained on a PC board, mounted to the back of a battery holder that takes 3 AAA batteries (not included). Along with the two stereo mics, there is an on/off switch, power LED, and a volume control. The output of the amplifier is a standard stereo 3.5mm headphone jack. This makes it simple to monitor the audio with your normal headphones or ear buds.

Being headphone level, you can also feed the output into a standard unbalanced line level input of an audio system, mixer, or recorder. It is amazing to plug your headphones in and hear distant conversations in the room and left to right audio imaging when someone walks across the room! From Velleman. (Noisy tenants? Plug this into your PC audio in jack, record it all night, burn a CD or thumb drive, and give it to your landlord... it works!)

**MK136** Stereo Ear Super Stereo Amplifier Kit

**\$9.95**

## Pocket Audio Generator

- ✓ Digital waveform generation
- ✓ Stereo out, dual RCA plugs

*Test Those Inputs!*

A perfect test source for stereo line inputs on any amplifier or mixer. Provides 50Hz, 100Hz, 1kHz, 10kHz, & 20kHz tones, plus 32 bit digital pink noise. Great to help you identify cables or left/right reversals!

Output is line level to two standard RCA plugs. Runs on two CR2016/2025 batteries not included. Measures 3.4" x 2" x 1". From Velleman.



**K8065** Pocket Audio Generator Kit **KIT** **\$29.95**

## Pocket Vu Meter

- ✓ LED bar graph display
- ✓ Built-in microphone

*Watch That Music!*

Hand held audio level meter that fits in your pocket! Built-in mic picks up music and audio and displays it on an LED bargraph. Includes enclosure shown. Runs on one 3V Li-Ion button cell, not included. From Velleman.



**MK146** Pocket Vu Meter Kit **KIT** **\$11.95**



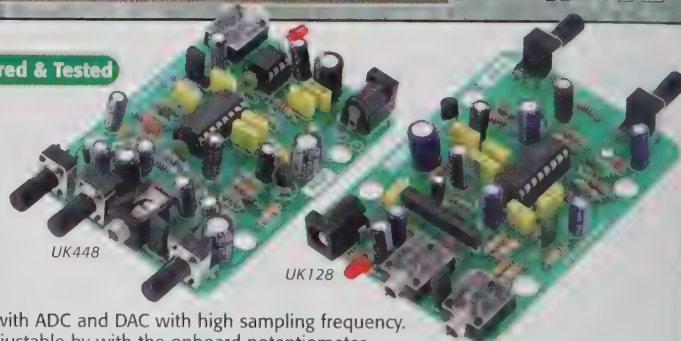
## Audio Echo Delay/Reverb Unit

KIT

Wired &amp; Tested

- ✓ High quality low noise/distortion output!
- ✓ Adjustable delay length (Up to 342ms)!
- ✓ Available with or without audio output amplifier!
- ✓ Optional custom enclosure available!

*HelloHello, NeatNeatKitKitWorksWorksGreatGreat!!*



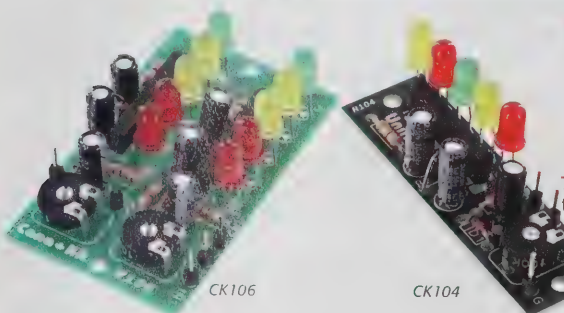
This echo delay/reverb circuit is based around the PT2399 echo audio processor IC and is equipped with ADC and DAC with high sampling frequency. An internal memory of 44K is used to generate a delay time of up to a maximum of 342ms, easily adjustable by with the onboard potentiometer.

The circuit also offers very low distortion (THD < 0.5%) and low noise (< -90 dBV), thus producing high quality audio output suitable for a wide variety of applications. The circuit incorporates both delay and repeats adjustments. Input sensitivity is 150mV / 20K Ohm.

The basic unit (128 series) features line output and is available as a kit or factory assembled & tested. The enhanced version (UK448) is only available factory assembled & tested and includes a microphone input preamplifier and an audio output amplifier for direct connection to a speaker!

This little kit is great for Karaoke, Custom Audio Equipment, Musical Instruments, and much more! It can be built into your existing equipment or pedal board, but an optional custom enclosure is also available to mount it as a stand-alone unit. Runs on regulated 9-12VDC at 100mA. Dimensions: 3.26" x 2.34". From CanaKit. (In the late '60s I built the Popular Electronics cover story kit "Reverb For Your Car" and it had delay springs in it!)

CK128	Audio Echo Delay/Reverb Unit Kit	\$39.95
UK128	Audio Echo Delay/Reverb Unit, Factory Assembled & Tested	\$49.95
BX128	Custom Enclosure For 128 Series	\$12.95
UK448	Deluxe Audio Echo Delay/Reverb Unit With Amplifiers, Factory Assembled & Tested	\$64.95
BX448	Custom Enclosure For 128 Series	\$12.95



KIT

Wired &amp; Tested

*Create Awesome Music-Driven Lighting Displays!*

These compact VU-meters are based on the AN6884 LED Driver Integrated Circuit that ensures a high input sensitivity - as low as 50mV! Directly connect to the audio Line-Out or speaker output of your audio source and you are ready to go! Compared these to the old style analogue VU-Meters and you will be awed by the lightning fast response. Also features adjustable sensitivity so you can fine-tune it to match your levels. On the CK106 each stereo channel is adjustable independently. Comes complete with green, yellow and red LEDs. Everything you need to add a cool music-powered light effect to any electronic project. A great conversation starter! Supply voltage: 5-14VDC / 200mA. Dimensions: 2.31" x 0.70" (CK104) / 1.42" x 2.37" (CK106). From CanaKit.

CK104	5-LED Vu-Meter Kit	\$12.95
UK104	5-LED Vu-Meter, Factory Assembled & Tested	\$15.95
CK106	10-LED Vu-Meter Kit	\$19.95
UK106	10-LED Vu-Meter, Factory Assembled & Tested	\$25.95

## LED Vu-Meters

- ✓ Fast and sensitive digitally controlled response
- ✓ Available in mono 5-LED or stereo 10-LED versions
- ✓ Includes red, yellow, and green LEDs
- ✓ Adjustable sensitivity

## 3-Channel LED Audio Spectrum Analyzer

KIT

Wired &amp; Tested

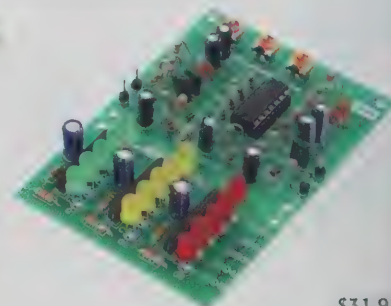
- ✓ High input sensitivity!
- ✓ 3 independent sensitivity controls!
- ✓ Connect directly to your audio system line-out!

This is a spectrum analyzer display with three channels that respond to low, medium and high frequencies of the audio band. It creates a fantastic display using three bars of colored LEDs (red, green and yellow). Thanks to the high input sensitivity, it can be connected directly to the Line-Out of your music system. The CK109 is also capable of operating over a wide range of voltages from 6 to 14VDC. From CanaKit.

*15 LEDs for a Dazzling Audio-Visual Display!*

### SPECIFICATIONS

Input Sensitivity:	25-150mV
Frequency Bands:	Low: 100Hz-300Hz Mid: 800Hz-2KHz High: 3KHz-5KHz
Supply Voltage:	6-14VDC / 200mA
Dimensions:	2.70" x 3.74"



CK109	3-Channel / 15-LED Audio Spectrum Display & VU-Meter Kit	\$31.95
UK109	3-Channel / 15-LED Audio Spectrum Display & VU-Meter, Factory Assembled & Tested	\$39.95

## Super Sensitive LED VU Meter

- ✓ 16 Dazzling red, yellow, and green LEDs!
- ✓ Highly sensitive input (50mV)!
- ✓ Connects directly to audio line-out!

KIT

Wired &amp; Tested

This super sensitive mono LED VU-Meter incorporates its own pre-amplifier, allowing you to directly connect to the line-out of any audio source.

Based around dual LM324 Quad Op-Amps, this VU-Meter uses 2 rows of 8 Red, Yellow, and Green LEDs to create a fantastic light display. Supply Voltage: 6-12VDC / 200mA. Input Sensitivity: 50mV. Dimensions: 3.20" x 1.60". From CanaKit.

CK324	Super Sensitive LED VU Meter Kit	\$19.95
UK324	Super Sensitive LED VU Meter, Factory Asmb & Tested	\$25.95

## LED Sound-To-Light Converter

- ✓ Ultra sensitive on-board microphone!
- ✓ Adjustable sensitivity!
- ✓ Powered by a standard 9V battery!

KIT

Wired &amp; Tested

This super-sensitive sound-to-light converter incorporates a built-in microphone that captures any ambient sound and lights six high-brightness Red LEDs. Sensitivity is fully adjustable via a PCB mounted trimmer potentiometer.

A great kit for fun, education or as a helpful tool to indicate a telephone rings, doorbells, alarms etc. for the hearing impaired. Dimensions: 2.30" x 1.85". From CanaKit.

CK457	LED Sound-to-Light Converter Kit	\$15.95
UK457	LED Sound-to-Light Converter, Factory Asmb & Tested	\$19.95







TOP  
SELLER!

KIT



**Shocking Results...  
Literally!**

This new kit was conceived by one of our engineers that likes to play with things that can generate large, loud sparks, and other frightening devices.

During the process of looking for parts for one of his latest experiments he discovered how difficult it was to find a high voltage transformer that met his requirements. Well, we had a super unit designed expressly for us!

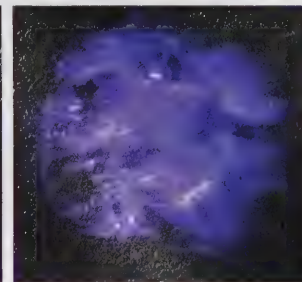
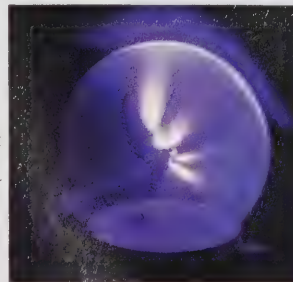
This is one heck of a neat kit! It really serves no purpose other than producing stunning lighting displays, drawing big sparks, scaring the neighbors and performing lots of high voltage experiments. But sometimes that's a great purpose for a kit!

In the picture to the right we took a regular clear "Decora" style light bulb and connected it to the PG13. WOW! A storm of sparks, light tracers and plasma filled the bulb! Holding your hand on the bulb doesn't hurt a bit and you can control the discharge!

It can also be used for powering other experiments... let your imagination be your guide! The high voltage at the terminal won't electrocute you, so it's relatively safe, but it can burn you, so use caution. Can also be run from 5-24VDC so the output voltage can be directly adjusted by simply adjusting the input voltage! This is for advanced experimenters only and not for the faint of heart! (Unless you buy the ECG Kit, then it's OK!)

## Spark Generating HV Plasma Generator

- ✓ Generate 2" sparks to a handheld screwdriver!
- ✓ Light fluorescent tubes without wires!
- ✓ Build your own Plasma Balls!
- ✓ Generates up to 25kV @ 20 KHz from a solid state circuit!



PG13  
PS21 Plasma Generator Kit  
16VAC Output Power Adapter

\$64.95  
\$22.95

## Air Blasting Ion Generator

- ✓ Generate negative ions along with a blast of fresh air without any noise!
- ✓ Generates a steady state DC voltage at a constant current, not pulsed!
- ✓ Generates 7.5kV DC negative, 400uA. That's a lot of ions!

**Generate A Breath  
Of Fresh Air!**

KIT



TOP  
SELLER!

This nifty kit includes a pre-made high voltage ion generator potted for your protection, and probably the best one available for the price. It also includes a neat experiment called an "ion wind generator". This generator works great for pollution removal in small areas (like after grandpa gets done in the bathroom!) and moves the air through the filter simply by the force of ion repulsion!

No fan blades, no noise, just swiftly moving, charged air! Gee, have we heard of this technology on a boatload of air cleaner infomercials lately? It's amazing when you get this built and actually feel the air flow and smell the very special clean ion smell. The first engineering prototype quickly went into the Ramsey employee restroom!

Learn how modern spacecraft use ions to accelerate through space and why ion engines are ideal for long-distance space travel. Includes ion power supply, 7 ion wind tubes, and mounting hardware for the ion wind generator. Runs on 12-15VDC at 500mA. (Caution...do not grab the output of the transformer, all the ions may be sucked out of your body! And don't you just hate it when that happens!)

IG7  
AC121 Ion Generator Kit  
12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

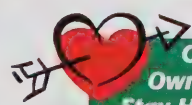
\$64.95  
\$9.95

TOP  
SELLER!



KIT

Wired & Tested



**Check Your  
Own Heart &  
Stay Healthy!**

## Electrocardiogram ECG Heart Monitor

- ✓ Visible and audible display of your heart rhythm
- ✓ Re-usable sensors included; just like visiting the lab at the hospital!
- ✓ Bright LED "Beat" indicator for easy viewing
- ✓ Monitor output for professional display on your oscilloscope

the human heart and body! Use the ECG1C to astound your physician with your knowledge of ECG/EKG systems. Enjoy learning about the inner workings of the heart while, at the same time, covering the stage-by-stage electronic circuit theory used in the kit to monitor it. The three probe wire pick-ups allow for easy application and experimentation without the cumbersome harness normally associated with ECG monitors.

The documentation with the ECG1C covers everything from the circuit description of the kit to the circuit description of the heart! Multiple "beat" indicators include a bright front panel LED that flashes with the actions of the heart along with an adjustable level audio speaker output that supports both mono and stereo hook-ups. In addition, a monitor output is provided to connect to any standard oscilloscope to view the traditional style ECG/EKG waveforms just like you see in a real ER or on one of the medical TV shows! See the display to the right? That was me, when I noticed some skipped beats in my pulse! An immediate cardiac check found I had Trigeminy, or PVCs that occur at intervals of 2 normal beats to one PVC! And I saw it with our ECG1 kit!



Look what I found!

The fully adjustable gain control on the front panel allows the user to custom tune the differential signal picked up by the probes giving you a perfect reading and display every time! 10 hospital grade re-usable probe patches are included together with the matching custom case set shown. Additional patches are available in 10-packs. Operates on a standard 9VDC battery for safe and simple operation. Note, the ECG1C is intended for hobbyist usage only. If you experience any cardiac symptoms, seek proper medical help immediately!

ECG1C  
ECG1WT  
ECGP10  
Electrocardiogram Heart Monitor Kit With Case  
Factory Assembled & Tested ECG1 With Case And Power Supply  
Set of 10 Replacement Reusable Probe Patches

\$44.95  
\$89.95  
\$4.95





TOP  
SELLER!

KIT



As Seen on CBS's  
Ghost Whisperer!

## Tri-Field "Sci-Fi" 3-Way Meter

- ✓ SEE RF, electric, and magnetic fields!
- ✓ Watch the magnetic field of the earth!
- ✓ Sense different magnetic poles!
- ✓ Detect RF transmitter fields
- ✓ Graphical display "sees" invisible fields

The TFM3C has three separate field sensors that are user selectable to provide a really cool readout on two highly graphical LED bargraphs! Utilizing the latest technology, including Hall Effect sensors, you can walk around your house and actually "SEE" these fields around you! You will be amazed at what you see. How sensitive is it? Well, you can see the magnetic field of the earth... THAT'S sensitive! The technical applications are endless. Use it to detect radiation from monitors and TV's, electrical discharges from appliances, RF emissions from unknown or hidden transmitters and RF sources, and a whole lot more! If you're wondering whether your wireless project or even your cell phone is working, you can easily check for RF! A 3-position switch in the center allows you to select electric, magnetic, or RF fields. A front panel "zero adjust" allows you to set the sensors and displays to a known clean "starting point".

If the TFM3C looks familiar, it's probably because you saw it in use on the CBS show Ghost Whisperer! It was used throughout episode #78, 02-27-2009 to detect the presence of ghosts! In the electric mode, the TFM3C's displays will wander away from zero even though there isn't a clear reason for it. What it was in the Ghost Whisperer was a friendly ghost. What it will be in your house... who knows! Runs on 4 AAA batteries (not included).

TFM3C Tri-Field Meter Kit With Case

\$74.95

## Laser Beam Audio Communicator

KIT

Send Audio Over That  
Laser Beam!

- ✓ Modulated at more than 16kHz for excellent voice audio fidelity
- ✓ Uses standard pocket laser module for 1/4 mile maximum range (included)
- ✓ Each kit includes one transmitter and one receiver
- ✓ Includes microphone and digital AGC circuit for full audio range control

TOP  
SELLER!

LASER  
TRANSMITTER



Now you can talk to your friends over one of the most secure long-distance transmission types available, a laser beam! Our new laser beam communicator allows you to talk with pretty good fidelity to your friends up to 1/4 mile away just using a pocket laser pointer.

The transmitter uses a microphone or external audio to modulate a laser beam on and off at a rate of more than 16kHz so the audio fidelity is much better than that of a telephone. A telephone is limited to 3kHz, but the LBC6K is limited to 6kHz. The receiver includes filtering to remove the 16kHz carrier and leave behind the high quality audio, and then boost its level for use with earphones. To improve the fidelity of the system, the transmitter employs audio AGC on the microphone to boost weak audio, and reduce loud audio so that the listener never misses a word.

Each kit includes a transmitter, receiver, and pocket laser pointer. This gives you a complete one-way audio path. If you need full duplex, or two way, buy two at the special price! Receiver and transmitter are designed to fit in two pieces of 2" PVC pipe for easy mounting and alignment. Each runs on a standard 9V battery, DC adapter or AC adapter (not included). Audio output drives a standard personal stereo headset. Your friends will be amazed when they see you talking over that red laser beam! (My kids built a couple of these and were really amazed! But then they asked me why they couldn't see their voice change the laser beam light... I told them "Um... ask your Mom!")

LBC6K Laser Beam Communicator Kit (Includes Receiver, Transmitter and Pocket Laser Pointer)

\$59.95

LBC6K2 TWO Laser Beam Communicator Kits, for Duplex or Two-Way Audio (Save \$10.00!)

\$109.95



KIT

Voice Over An IR Beam!

## Infrared Light Beam Communicator

- ✓ Send your voice over light - even through windows!
- ✓ 30' to 1/4 mile range!
- ✓ Receiver drives a speaker or earphone!

Transmits a modulated infrared light beam up to 30 feet without lenses, up to 1/4 mile using simple lenses. Since the beam is modulated with a 30 KHz carrier (like AM radio) there is no effect from 60 Hz hum that is produced by indoor lighting. Easily transmits through windows - ideal for "bugs" or listening to IR television remote controls. The transmitter can use any type of mic and is very sensitive. The receiver employs an IR PIN diode detector and there is enough power to drive any loudspeaker or earphone.

The PC board is cleverly "scored" so you can easily separate the Transmit and Receive sections so they can be used individually to transmit at one location and receive at another. Units run on 9 to 12 VDC and will use a standard 9V battery. The LB56 has been a popular kit for years and makes a great science fair project to show how you can send audio over Infrared! Custom case set measures 5"W x 1 1/2"H x 5 1/4"D. (First, two paper cups & string, then soup cans, now IR beams!)

LB56C Infrared Light Beam Communicator Kit With Case

\$34.95

## Speedy Personal Speed Radar Gun

KIT

TOP  
SELLER!

- ✓ Direct readout in miles/hour, kilometers/hour or feet/second
- ✓ 1/8 mile range for average car-sized object
- ✓ Earphone output to hear actual Doppler shift
- ✓ The nation's #1 science fair project!

YOU Be The Cop!  
How Fast Was HE Going!

Here's a kit that's not only a ton of fun for everyone, but is useful too! This low cost microwave radar uses the same principle found in police units costing thousands more. You'll turn heads when you clock cars, planes, runners, boats, horses, bikes, races, or virtually any large object that moves.

Speed readout is on two LED displays which can be set accurately (better than 1%) to show MPH, kilometers-per-hour, or even feet-per-second. An earphone output allows you to hear the actual Doppler frequency shift of moving objects, the theory upon which all radars operate.

Uses two 13 oz. coffee or juice cans for antenna (not included)... so start drinking! Antenna unit can be remotely placed up to 300 feet away. The SG7 is easy and informative to build, with a detailed manual that not only carefully guides you to a finished unit but also tells you the hows and whys of Doppler radar. Even though the kit employs microwave circuitry, no exotic tuning is needed. All critical sections are PCB stripline and calibration is as easy as pointing the SG7 at a fluorescent lamp! Your Speedy kit includes a deluxe black ABS plastic case with SPEEDY graphics for a neat professional look. Operates on 12-15VDC. Electronics case: 3 5/8" x 5 3/4" x 1 1/8". (Yes, the coffee needs to be in cans!)

SG7 Speedy Personal Speed Radar Gun Kit  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$74.95

\$9.95







## 200 kV Van de Graaff Generator

Wired & Tested

KIT

- ✓ 200,000 volt potential!
- ✓ Sparks up to 5"!
- ✓ Operates in high humidity!
- ✓ Factory assembled & tested

*Dazzle Them With Huge Sparks!  
Make Their Hair Stand On End!*



VG200W  
Discharge  
Wand

Create your own lightning with these time-tested devices that have delighted students for decades! Named after the inventor Van de Graaff, a physicist who built the first generator in 1929 at Princeton University. This machine produces low-amperage static electricity that can be "shocking" but perfectly safe. Two different pulleys with 2 neoprene belts inside a 1 3/4" plastic column create and carry a static charge up to the 7" polished aluminum collector globe. You can draw out this static charge in a burst of lightning, sparks, or you can even set each hair on your head on end! It's an incredible display!

The entire unit is 18" tall, runs on 110VAC, and includes a ground clip for discharge wands. Our comprehensive instruction book tells you how to raise hair, produce lightning and electric wind, experiment with St. Elmo's fire or electrostatic attraction and repulsion. For a stunning display, use the matching "discharge wand" with your VG200 and watch the sparks fly between the two globes!



If you're looking for a really neat experience and want to learn the basics at the same time, the Van deGraaff generator kit is for you. If you can't wait to build it and just want to have a ball with the sparks, we even offer it factory assembled and tested! Your choice! If 200 kV isn't enough zap for you, check out our VG400 below! (My kid didn't believe me that these will make your hair stand straight up... now he believes!)

VG200WT  
VG200W

200kV Van deGraaff Generator, Factory Assembled & Tested  
Matching Discharge Wand, 1.3' Rod

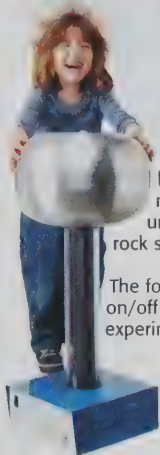
\$139.95  
\$69.95

Wired & Tested

*When 200,000 Volts...  
Just Isn't Enough!*

## 400 kV Van de Graaff Generator

- ✓ Super high output, 400,000 volt potential!
- ✓ Generates sparks up to 12"!
- ✓ Heavy duty construction throughout
- ✓ Factory assembled & tested



What's the matter, our 200 kV Van deGraaff doesn't have enough "stooch" for you? You want even more of your hair to stand straight up? You want foot long sparks? Well, for you die-hard shock fans, here you go; how does 400 kV sound? Just like its little brother the VG200, it can create lightning and make hair literally stand up on end! The VG400 produces up to 400,000 volts with special neoprene belts inside a 3" diameter transparent butyrate column to carry the 10 microamp charge up to the whopping 13" polished aluminum globe! It proudly stands 35.5" tall with a very heavy metal base for rock stable operation.

The foolproof brush assembly never needs adjustment to guarantee flawless operation... and lots of sparks! The VG400 runs on 110VA and includes a power cord, on/off switch, and a grounding terminal for discharge wands. Just like the VG200, we include a comprehensive instruction book that nicely describes all the experiments and displays you can produce.

If you really want to put on a show use the heavy duty matching VG400W discharge wand and watch the action between them! Grounded to the VG400WT the sparks really fly! It's incredible and produces a fantastic display! The high power VG400 is available factory assembled and tested only to assure you perfect and safe operation. When you receive it, just plug it in and you'll have a hair-raising experience... we guarantee it! If you have a hankering to safely play around with 400,000 volts, check out this high-power Van deGraaff generator!



VG400W  
Discharge  
Wand

VG400WT  
VG400W

400 kV Van deGraaff Generator, Factory Assembled & Tested  
Matching Discharge Wand, 2.6' Rod

\$469.95  
\$72.95

## Tickle-Stick Shocker

- ✓ Shocking but harmless fun!
- ✓ You'll let go quick
- ✓ Teasing LED indicator!



TOP  
SELLER!

*Get The Shock Of Your Life!*

Tickle or stimulator - take your pick... once you grab it, you'll let go quick!! Mount this little kit plus a secret switch - like a mercury tilt switch - in an ingenious can or box and watch the fun. Adding a bright ribbon bow is remarkably effective at baiting the unwary! The kit has a pulsing 80 volt tickle output and a mischievous blinking LED. And who can resist a blinking light!

Great fun for your desk, workbench, or coffee table... "Hey, I told you not to touch!" Runs on 3-6 VDC battery power (not included). This kit has become a fixture at our Hamfest displays, providing us, and others who are in the know, hours of fun! Measures 1 1/2" x 3/4" x 2 1/2".

TS4 Tickle Stick Kit

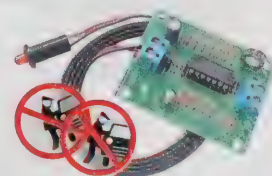
KIT

\$9.95

## Car Alarm Simulator

- ✓ Activates automatically when engine is off!
- ✓ Easy to install, just two wires!
- ✓ Adjustable sensitivity!
- ✓ Includes pre-wired LED holder and labels!

*Keep Them Away From Your Car!*



When car thieves are scoping out prospective targets, sometimes all it takes is the appearance of an alarm system to deter them... and its certainly a heck of a lot cheaper than the real thing! With this nifty kit you can put your own "dummy" alarm together to save yourself some cash, and maybe your car in the process!

This little kit gives you a realistic-looking flashing LED sequence that simulates the appearance of an active car alarm system! For added convenience, it also hooks directly into your cars electrical system to automatically enable the alarm simulation when you shut your engine off! Give yourself a little extra insurance with this affordable kit from Velleman!

MK126 Car Alarm Simulator Kit

KIT

\$9.95

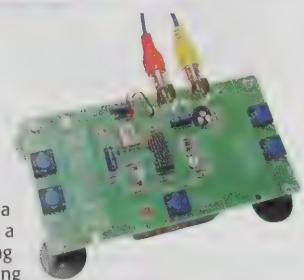
## Classic Table Tennis Video Game

KIT

- ✓ Build the classic game that started it all!
- ✓ 2-player head to head mode!
- ✓ Single player with 4 levels!
- ✓ RCA video and audio outputs!

*Go Back In Time, After You Build It!*

Today, videogames are a 10 billion dollar industry, generating even more revenue than the Hollywood film business, but it all started in 1972 with a simple table tennis simulation that soon found its way into bars, and later homes, all over the country! Now with the MK121 you can put together a fun kit that will certainly take you back to the early days of gaming! Once complete, you can plug this kit directly into your TV for a fun retro gaming experience for the whole family! Control the paddles with one of four movement buttons, and your score is displayed on screen! Test your soldering skills then test your ping-pong skills! Powered by 3 AA batteries (not included). Measures 2.9" x 5.5". From Velleman.



MK121

Table Tennis Video Game Kit

\$17.95



# Holiday Favorites!

## Electronics Is Fun, Especially At The Holidays

### Animated Ghost

- ✓ Automatically greets your visitors!
- ✓ Responds to sudden noises
- ✓ Built-in microphone
- ✓ Adjustable sensitivity

*Moves, Shakes, Blinks!*



Who says ghosts aren't real? Once your friends see this one they'll think differently! The unique circuit board design includes two ominous blinking eyes that change with various conditions, including sudden changes in ambient noise.

A highly sensitive built-in microphone picks up anything from noises to talking and makes the ghost dance with its built-in motor, make eerie sounds with the built-in speaker, and randomly blink.

A white cloth and a hanger are included as shown to make it look even spookier! Runs on 2 AAA batteries (not included). From Velleman.

MK166 Animated Ghost Kit

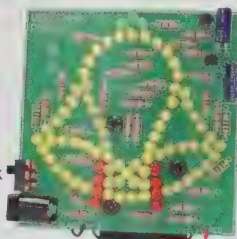


\$21.95

### Animated Holiday Bell

- ✓ 83 LED animated motion!
- ✓ Multiple colors!

*Swings Back And Forth!*



83 LEDs provide a neat looking holiday bell that swings back and forth! Multiple green, red, and yellow LEDs provide you with a festive holiday spirit the moment you see this bell!

A PC board mounted on/off switch and standard power connector are included. Runs on 9-12VDC or a standard 9V battery (not included). Measures 3.2" x 3.5". From Velleman.

MK122 LED Animated Bell Kit



\$18.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95

### LED Deluxe Christmas Tree

- ✓ 134 random blinking LEDs!
- ✓ Large multi color display!
- ✓ Battery or external power!
- ✓ Built-in on/off switch



*Light Up Your Tree In Style!*

This beautiful electronic Christmas Tree consists of a whopping 134 bright LEDs! Of the 134 LEDs, 18 randomly blinking "candles" give the tree an exciting animated look! Red, green, and yellow LEDs are used to provide a brilliant display.

Runs on an external 9-12VDC supply or a standard 9V battery. Use an external power supply and leave it on continuously! Includes a PC board mounted on/off switch. PC board measures 5.6" x 3.2". From Velleman.

MK117 LED Deluxe Christmas Tree Kit



\$24.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95

### LED Christmas Tree

- ✓ 16 bright flashing red LEDs!
- ✓ Easy 9V battery operation!
- ✓ Self standing or "hangable"



*Display The Season!*

While a little more basic compared to the others above, this LED Christmas Tree is still a very neat looking self standing attention getter! The green PC board has 16 bright red LEDs mounted in the traditional tree pattern.

A nice 4 transistor circuit is used to make the LEDs blink just like your big tree does! An attached battery pack mounts on the bottom allowing the tree to be self standing or to be hung on your real tree. Runs on a standard 9V battery (not included). Measures 2.4" x 4" x 1". From Velleman.

MK100 LED Christmas Tree Kit



\$6.95

### LED Halloween Pumpkin

- ✓ 25 bright LEDs!
- ✓ Random flash like a candle!
- ✓ Super bright illumination!

*Spook Them With LEDs!*



You won't be scraping the seeds and guts out of this pumpkin! A six-transistor circuit provides a neat random flash pattern that looks just like a flickering candle, and a super bright LED illuminates the entire pumpkin with a spooky glow!

Runs on a standard 9V battery (not included). Includes an edge mounted on/off slide switch. From Velleman.

MK145 LED Halloween Pumpkin Kit

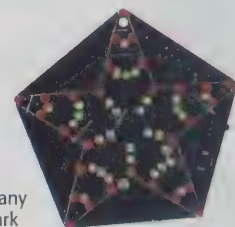


\$11.95

### LED Sound Actuated Star

- ✓ Acts like a LED Vu Meter!
- ✓ Built-in microphone!
- ✓ Adjustable sensitivity!

*Is It A Star Or A Meter?*



This is one of the neatest holiday displays that will light up any party! 60 multi-colored LEDs form an attractive star on a dark background PC board.

But it's not just a display... it responds to room audio! That's right, the built-in microphone picks up music and room audio and the LEDs respond just like a professional LED Vu meter!

Adjustable sensitivity allows you to balance the display to any audio level. Great for parties and events. Runs on 9-12VDC. Measures 4.2" x 4.4" x 1.4". From Velleman.

MK172 LED Sound Actuated Star Kit



\$19.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95

### LED Santa Display

- ✓ 126 LED animated display!
- ✓ Multi-color!

*Here Comes Santa!*



What a way to welcome the holiday season and learn about electronics at the same time!

This animated Santa and reindeer display has 126 dazzling colored LEDs to make a really nice holiday sign. Runs on 9-12VDC so you can use a standard 9V battery or an external power supply so it can be left on continuously. Includes an on/off switch. Measures 3.2" x 5.7". From Velleman.

MK116 Animated Santa Display Kit



\$21.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95

### 3D LED Christmas Tree

- ✓ Free standing 3D design!
- ✓ 16 flashing LEDs!
- ✓ Customize with extra LEDs!
- ✓ Can be hung on the tree!

*Dazzle Your Friends!*



This Christmas Tree is not your average PC board display! It has 4 "branch" sections giving it a 3D depth look!

Its unique design holds a standard 9V battery at its base as its "trunk" and will stand up on a table or desk with or without the battery. 16 flashing red LEDs are placed on the branches. Extra green and yellow LEDs are included to allow you to customize your tree any way you choose!

Runs on 9-12VDC or the 9V battery (not included) in its base. Measures 3.5" x 4.0". From Velleman.

MK130 3D LED Christmas Tree Kit



\$7.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95





## SMT LED Christmas Tree

- ✓ Alternating flashing 6 SMT LEDs!
- ✓ Great attention grabber!
- ✓ Learn SMT over the Holidays!

### Wear A Flashing Tree!

Build this subminiature Christmas Tree and watch it alternately flash red surface mount LEDs! Small enough to wear as a badge or pendant, or to hang on the tree.

Six high intensity SMT LEDs brilliantly light up this tree. People will be amazed seeing the actual components on the tree while it flashes. Plus, you can tell them you built it! SMT components are used throughout the kit to give you a great start in surface mount. We know they are smaller than small, so as always we include extra parts in case you lose or damage any.

Runs on one standard CR2025 or CR2032 Li-Ion button cell. Measures 1.75" x .3". From Velleman.

MK142 SMT LED Christmas Tree Kit **KIT** \$10.95



## LED Flashing Holiday Star

- ✓ 35 brilliant red or yellow LEDs!
- ✓ Flashing or steady display!
- ✓ Freestanding or hanging!

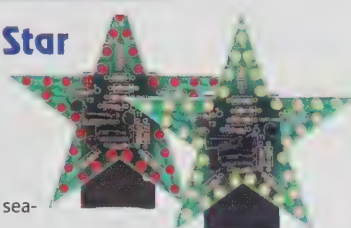
### Brilliant LED Star!

A great seasonal gadget or gift for the holiday season!

A classic star shaped PC board contains 35 brilliant red or yellow LEDs. The circuit allows you to select either a flashing or steady display of the LEDs.

The built-in battery holder also acts as a freestanding base for table or desktop use, or you can hang it from the tree or ceiling. Runs on a standard 9V battery (not included). Measures 3.54" x 3.54". Makes a great addition to any holiday decoration. From Velleman.

MK169R Flashing Red LED Star Kit **KIT** \$12.95  
MK169Y Flashing Yellow LED Star Kit **KIT** \$12.95



## Rotating Hearts LED Display

- ✓ 46 Dazzling Red LEDs!
- ✓ Eye-Catching Interlocking Heart Design!
- ✓ Adjustable Speed!

### The Ultimate LED Heart Display!

An ideal and unique gift for any romantic occasion! Fun to build kit for any electronics enthusiast, this circuit is based on 46 LEDs arranged into two hearts creating a fantastic moving light display around each heart.

The movement speed is adjustable via trimmer potentiometer and the circuit includes a built-in adapter jack that can be connected to any 9-12VDC adapter. Supply Voltage: 9-12VDC / 300mA Dimensions - Display Board: 3.70" x 3.06" Main Board: 3.70" x 1.06". From CanaKit.

CK155 Rotating Hearts LED Display Kit \$29.95  
UK155 Rotating Hearts LED Display - Wired & Tested \$39.95  
PSC126 Regulated Adapter 12VDC, 600mA \$9.95



## Flashing LED Sweetheart

- ✓ 28 brilliant red LEDs!
- ✓ Unique dual heart design!
- ✓ Freestanding mount!

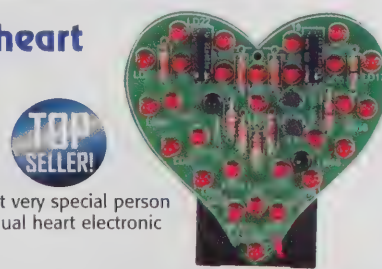
### The Perfect Valentine!

What a way to display your feelings to that very special person in your life! Dazzle her with this unique dual heart electronic display.

28 brilliant red LEDs are formed into two separate heart designs on the heart shaped PC board creating a great flashing display.

Built-in battery holder base makes the heart freestanding and perfect for a desk or table. Runs on a standard 9V battery (not included). Measures 2.4" x 2.4" x 1.2". From Velleman.

MK101 Flashing LED Sweetheart Kit **KIT** \$6.95



## Flickering Electronic Candle

- ✓ Yellow high intensity LED!
- ✓ 3 different "flame modes!"
- ✓ Power saver timer!

### Can't Blow This One Out!

What a great and safe way to display the traditional flickering candle at the holidays!

In reality, this "candle" is a high intensity Yellow LED, and that means its safe for the kids, pets, and your fingers! The electronic circuit simulates three different modes: realistic flickering flame, steady flame, and slow fade in/fade out. All this without any heat, smoke, or mess! Plus the circuit features an automatic 5 hour power saver timer!

The unique round PC board is designed to drop into a standard 38mm plastic or glass cup. Use a frosted cup for the best display results! Runs on a standard CR2032 button cell (not included). Measures 1.5" x .98". From Velleman.

MK167 Flickering Electronic Candle Kit **KIT** \$8.95



## LED Animated Effects Star

- ✓ 60 brilliant animated LEDs!
- ✓ Microprocessor controlled!
- ✓ 24 different effects with sequencing!
- ✓ Create your own multi-colored display!

### Dazzling Animated Holiday Display!

This large star features a whopping 60 LEDs and a microprocessor to provide 24 separate animated effects!

Besides the red LEDs, additional yellow LEDs are also included to allow you to custom build your own multi-colored display! Effects include 3 static displays, 15 blinking displays, and 6 animations complete with fading! In addition, "all effects" sequencing is available.

Runs on your choice of a standard 9V battery or an external 9-12VDC source. Measures 4.13" x 4.33" x 1.38". From Velleman.

MK170 LED Animated Effects Star Kit **KIT** \$29.95  
AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95



## SMT LED Flashing Heart

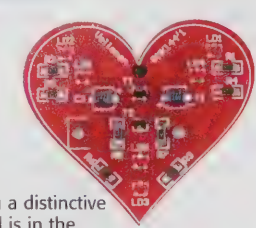
- ✓ 6 Alternating flashing SMT LEDs!
- ✓ Learn about SMT devices and design
- ✓ Gets her attention!

### The SMT Valentine!

Just like the MK142 Christmas Tree, this little kit gives you a distinctive display using 6 Surface Mount (SMT) LEDs. The PC board is in the shape of a heart and is also red.

The small size makes it perfect to be used as a badge or hanging pendant around your neck. Runs on a small CR2025 or CR2032 button cell (not included). Makes a great SMT learning kit and extra SMT components are included just in case you lose or damage any! Measures 1.9" x 1.7" x .3". From Velleman.

MK144 SMT LED Flashing Heart Kit **KIT** \$11.95



## Electronic "Love Tester"

- ✓ 10 LED love scale display!
- ✓ Audible love level sound!
- ✓ Great party fun!

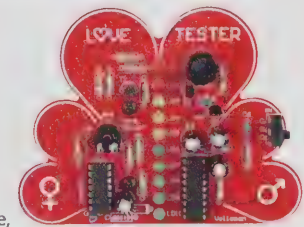
### Check Your Love Life!

This uniquely shaped "Love Tester" is the ultimate gag for any couple! Designed to check your love life, each partner holds one end of the tester PCB at the appropriate male and female touch pads. Then they romantically join hands and watch the results on the love meter!

10 green, yellow, and red LEDs act like a scale and just like the carnival, when it hits the top they flash, indicating you're a red hot couple! There is also an audible alarm that changes with the "love level."

Next time you're at a party that just isn't going anywhere, bring out this little tester and the party will come to life! It's a riot! Wide sensitivity range is compatible with all couples. Includes a built-in power on/off switch. Runs on a standard 9V battery (not included). Measures 4.1" x 3.1" x .98". From Velleman.

MK149 Electronic Love Tester Kit **KIT** \$16.95







**Measure Elevation To A  
Third Of An Inch  
And Air Pressure In  
Nine Formats!**

**KIT**

**TOP  
SELLER!**

**Wired & Tested**

## High Resolution Air Pressure-Elevation Sensor

- ✓ Pressure resolution greater than 0.0001kPa!
- ✓ Super elevation resolution better than 1/3"!
- ✓ 128 x 64 pixel graphical display!
- ✓ Shows realtime elevation & pressure changes!
- ✓ USB computer interface for easy data transfer!
- ✓ 13,824 samples of FLASH storage available!
- ✓ Small coat pocket size
- ✓ Input for storage of data when YOU want it!
- ✓ Multiple built-in alarms
- ✓ Settable offsets for pressure and elevation
- ✓ Built-in Li-Ion rechargeable battery
- ✓ Built-in charging & power management system
- ✓ Run & charge from internal battery, USB power, or external 6-30VDC source!
- ✓ Runs 2 days on a single charge
- ✓ Simple graphical menu based operation

## Accuracy Simply Beyond Belief!

### THE BEST JUST GOT BETTER!

The response to the UP24 was incredible! Customers from professional land surveyors, meteorologists, scientists, pilots and hikers to the curious hobbyist were overwhelmed with its sensitivity and accuracy. Reading realtime elevation to a third of an inch blew their minds! Even with this response we considered it a challenge to make it even better... and we sure did! Introducing the next generation UP24B!

First, for extended field use, we designed an internal lithium ion power cell and a state of the art power management system. Now you can charge the internal power cell from either an external source of 6VDC to 30VDC or a standard 5VDC USB connection from a PC, laptop, or USB charger! The power management system determines the best charging source to use as well as operates the UP24B while keeping the lithium ion cell at full charge. Charging status and battery condition displays are also provided.

Next we added a "MARK" feature. This allows storing a single data point reading when YOU want instead of blindly storing readings at the selected sample rate. A connection jack is provided for a simple contact closure to make a reading. This closure can be a "dry" set of contacts or electronic closure. Data storage is in comma delimited format for easy loading into a spreadsheet. Each time you enter the "MARK MODE" a new data block is started allowing you to easily identify multiple sets of data. Current data is constantly displayed for your convenience in mark mode.

Finally, we streamlined the controls to make a more compact profile. The rotary menu navigation dial has been replaced by contactless proximity buttons for more reliable operation! Just touch your way through the menus without any dials or switches!

### THE ULTIMATE PRODUCT FOR THE SERIOUS, THE CURIOUS, AND THE PROFESSIONAL!

We did it again! The UP24 was one of our most advanced kits to date. Rather than resting on our laurels we made it even better and the new UP24B is an absolute MUST for anyone serious about the environment around us! But the applications only begin there. The unique design allows unprecedented super high resolution measurements and display of absolute atmospheric air pressure and elevation. Hobbyists and weather enthusiasts absolutely love it! Land surveyors, scientists, and pilots have made it a "must have"!

### ELEVATION TO A THIRD OF AN INCH!

I have written a lot of catalog pages and a boatload of specification sheets but this one is a challenge because the applications are endless and the performance characteristics are beyond description! The UP24B senses ambient air pressure and critically calculates elevation with unheard of precision!

Using a highly sensitive sensor and 24-bit A/D converter in a special noise-immune design, less than 1/3 of an inch of elevation resolution is achieved! YES, we said 1/3 of an inch! This high accuracy and resolution opens the door to a host of sophisticated environmental air pressure monitoring applications.

### AIR PRESSURE IN ANY FORMAT!

Unlike your normal run-of-the-mill barometer, air pressure is sensed in Pa's or kPa's. What are those you may ask? Pascals or KiloPascals. However, don't be afraid, for your convenience, and to fit any application you may have, it is also displayed in millibars, bars, PSI, atmospheres, millimeters of mercury, inches of mercury, and feet of water! Take your pick! The range of the UP24B is 15kPa to 155kPa. That also means:

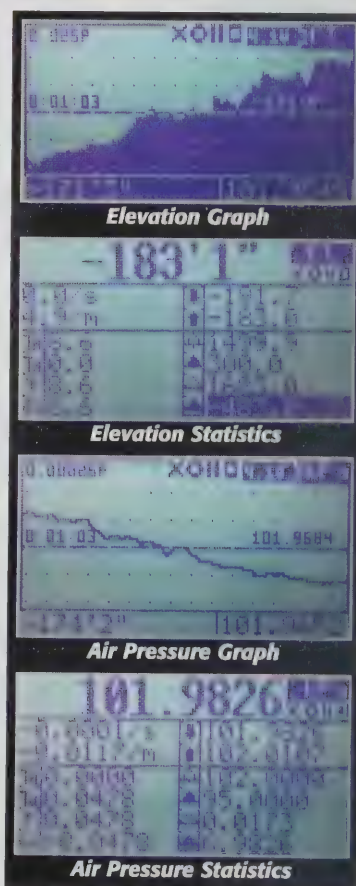
- ✓ 15000 to 155000 Pascal's
- ✓ 150 to 1550 Millibars
- ✓ 0.15 to 1.55 Bars
- ✓ 2.175566 to 22.48085 Pounds per square inch
- ✓ 0.1480385 to 1.529731 Atmospheres
- ✓ 112.5093 to 1162.596 Millimeters of mercury
- ✓ 4.429498 to 45.77148 Inches of mercury
- ✓ 5.02 to 51.9 feet of water

### THE HI-RES REALTIME ATMOSPHERE SENSOR!

Gradual pressure changes, like a barometer, can show you gradual changes in the weather. Instantaneous changes in air pressure can show you a whole lot more! Weather-wise, high resolution pressure changes can be used to anticipate and even estimate related wind gusts and speeds. This together with "on the fly" pressure changes will give you the upper hand in weather monitoring. Part of ARPS (Advanced Regional Prediction System) is to obtain and analyze realtime data to provide a prediction system for weather components. The UP24B is ideal as a source for highly accurate realtime data.

### THEN THE ENGINEER SAID "WATCH THIS"!

But what if the air pressure changes that need to be sensed and recorded are ever so slight? You have the perfect ultra reliable sensor and heart of an alarm system for a building. When I first heard this I questioned it. Then the engineering staff said "watch this..." A hundred feet from the main entrance of Ramsey, they called the front receptionist and asked her to open the front door to the building. WOW! An immediate change in air pressure registered on the UP24B! From an open door, to a broken window, to wind damage, it's all detected and recorded in the UP24B! The built-in alarm settings can be set for high or low limits to trip other equipment.







### THE ULTIMATE ELEVATION METER!

We've talked about air pressure, now let's talk about elevation! The incredibly precise 24 bit A/D converter in the UP24B looks at the air pressure and converts it to elevation above sea level. Once again, there I was standing in the engineering office watching the LCD graph. The text at the bottom of the screen said 472' 3". I said yea, so what? They said raise it up a few inches and watch. As I raised it the display constantly changed...472', 8"; 473' 1" and so on. I couldn't believe it. The following day I took it to a tower site where I knew the ground elevation and it was dead-on... 1701', 6". Not only did I have the text display of the elevation but a chart graph of the elevation history!

The applications for the super accurate elevation meter are endless. From watching and recording elevations during hiking trips to measuring and recording the wave heights on boats! Let your imagination take over from there!

### MARK MODE!

The special mark mode feature allows you to take readings when you want to. Simply supply a contact closure to the "MARK" input jack with the unit in Mark Mode and the current reading will be stored in internal FLASH memory. You can then download the data using the USB connector. Stored data is in comma delimited format for easy insertion into a spread sheet.

### SPECIAL AIRCRAFT MODE!

What about aircraft? Needless to say, as a handheld device measuring air pressure, aircraft applications are limited to unpressurized cabins. But the UP24B provides valuable flight assistance in such cabins and smaller aircraft. In fact, a special "Pilots Mode" is included in the menu to set a min/max altitude window setting to use in conjunction with the built in high and low alarms! The window is easily set up by programming in the desired high and low altitudes. If these limits are exceeded the UP24 will sound an alarm.

### LOCAL OFFSETS & ALARMS...NO PROBLEM!

To accommodate site variations, offsets for pressure, elevation, and related hysteresis are also provided as a menu selected operation. Likewise, both high and low alarms can be enabled and set over a wide range of lows and highs for both pressure and elevation!

### SMALL, LIGHTWEIGHT, THE SENSOR OF YOUR DREAMS!

While the UP24B is small enough to be kept in your coat pocket, it boasts a large 2.78" x 1.53" 128x64 pixel LCD display screen making viewing easy. Display modes include both realtime pressure and elevation graphs as well as pressure and elevation statistics. There are 12 user selectable sample rates from 1/10th of a second all the way up to every 15 minutes. The special MARK MODE is also available to allow data collection at your own rate.

What if you're in the field and want to save data captured in your UP24B? No problem there either! The built-in FLASH storage provides 13,824 samples of storage. That's equivalent to 3 hours and 50 minutes at the 1 second sample rate! Of course it's about 20 minutes at 1/10th of a second sample rate but that's probably faster than anybody, other than Wile E. Coyote, would need! When you get back you can transfer your data to your PC through a standard USB interface. A simple set of commands sent via your USB port can be used to set up many of the parameters of the UP24B directly from your computer using a terminal type interface or your own program. The data is comma delimited so it can easily be loaded into a spreadsheet.

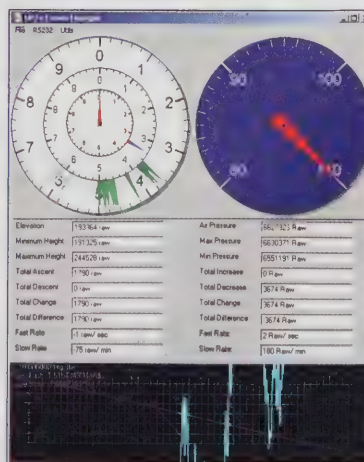
Does all of this sound too good to be true? It comes close! And it all fits in a small handheld case that measures 5.5" x 3.6" x 1.5" and weighs about 4oz with batteries. It runs on a single internal lithium ion battery and includes a built in charger/power management system. The UP24B can be operated on the internal battery, connected USB port on any PC or laptop, or external 6VDC to 30VDC power source. The power management system decides what source to use and also charges the internal battery from the connected source. Operating time on a full charge is over 2 days of continuous operation.

Want to run 24/7 even during power outages? Just connect either external source and turn on the UP24B. It will maintain the battery charge and operate the UP24B as long as necessary. If the power goes off the batteries will take over. Once the power is restored the battery will be recharged for the next time. If you're looking for the finest air pressure and elevation sensor, check out the UP24B, truly a marvel in the industry!

### SIMPLE VISUAL BASIC APPLICATIONS!

A Visual Basic application available on our web site enables you to have a dial type graphic display of pressure, altitude and statistics in real time on your computer and update the data on-the-fly as text data into a custom spreadsheet. Want to design your own interface? We even supply the Visual Basic source code for the graphics display application. You are free to use it to customize your own application. Routinely updated interface software is available FREE at our website 24/7! Got an application you'd like to share? We'll be glad to make it available to other UP24B users!

**Aviation... Mountain Climbing...  
Hiking... Wave Heights, Land  
Elevations... Pressure Alarms...  
Burglar Alarms... Air Movement  
Detection... Structure Heights,  
Weather Changes...  
And a Whole Lot More!**



UP24B Visual Basic software application screen display

### SPECIFICATIONS

Pressure Range:	15kPa to 155kPa
Pressure Units:	KiloPascals, pascals, millibars, bars, pounds per square inch, atmospheres, millimeters of mercury, inches of mercury, feet of water -1,000 feet to 44,300 feet (-308.4 to 13,504 meters)
Elevation Range:	Feet/inches, meters, kilometers
Elevation Units:	Pressure graph, pressure stats, elevation graph, elevation stats
Display Modes:	Better than 1/3 of an inch (8.5 mm)
Resolution:	12 selectable rates: 1/10 sec, 1/5 sec, 1/2 sec, 1 sec, 10 sec, 15 sec, 30 sec, 1 min, 5 min, 10 min, 15 min
Sample Rates:	Selectable pressure, elevation, pressure hysteresis, elevation hysteresis
Offsets:	14kPa to 114kPa in 1/10Pa increments -3,298.4' to 45,639.4' in 0.1' increments
Offset, pressure:	0Pa to 10Pa in 0.1Pa increments
Offset, elevation:	0' to 32.8' in 0.1' increments
Offset, pressure hysteresis:	Low and High Pressure, Low and High Elevation, low/high on/off
Offset, elevation hysteresis:	100kPa to 114kPa in 0.1Pa increments
Alarms menu:	14kPa to 100kPa in 0.1 increments
Alarm, high pressure:	158.6' to 45,639.4' in 0.1' increments
Alarm, low pressure:	-3,298.4' to 45,639.4' in 0.1' increments
Alarm, high elevation:	13,824 samples or 3 hours 50 minutes at 1 second sample rate
Alarm, low elevation:	Stores single realtime event upon external contact closure
Storage:	0.0' to 45,639' in 0.1' increments
Mark mode:	Contactless proximity touch switches with graphical drop down menus, power on/off switch
Pilot elevation window:	USB 2.0 Mini USB Type-B
User interface:	-1,000Pa to 1,000Pa in 0.1Pa increments
Computer interface:	Reset stats, reset chart data, reset to default settings
Utility menu, calibrate:	LCD, 128W x 64H pixels
Utility menu, resets:	Viewing Area: 2.78"W x 1.53" H (70.7mm x 38.8mm)
Display:	Dot Pitch: 0.02" W x 0.02"H (0.52mm x 0.52mm)
Power Requirements:	Dot Size: 0.019" W x 0.019"H, (0.48mm x 0.48 mm)
Color:	Internal Li-Ion battery, charges/operates from 5V USB port or external 6-30VDC source via standard 2.1mm power connector
Dimensions:	Black
Weight:	5.5"L x 3.6"W x 1.5"H, (139.5mm x 91.4 mm x 38.1mm)
	4 oz, 0.12 kg including battery

### Command Description

G EL	Get elevation
G PR	Get pressure
G OP	Get offset pressure
G OE	Set offset elevation
G VB	Get supply voltage
G CH	Get entire chart (in CSV format)
G PS	Get pressure stats (in CSV format)
G ES	Get elevation stats (in CSV format)
G PU	Get Pressure Units and index
G EU	Get Elevation Units and index
G SR	Get Sample Rate and index
G SD	Get Screen dump
S PU #	Set pressure units index
S EU #	Set elevation units index
S RE	Set reset elevation stats
S RP	Set reset pressure stats
S SR #	Set sample rate index
S RM #	Set report mode (send data per sample mode, 0 off, 1 on)

UP24B GET and SET commands



## Laser Light Trip Sensor

**KIT**

- ✓ Set up a security fence for over 500 yards of continuous coverage
- ✓ Includes both audible and visible alert indicators!
- ✓ 5 Amp external trigger relay for custom applications!
- ✓ Detector standby current draw of only 10 uA!!!

**TOP  
SELLER!**



**Build It Tonight, Sleep Tight!**

For years hobbyists have been intrigued by the possibility of using a 'beam of light' to control other devices! The abundance of inexpensive laser elements that have now become available has further pushed the demand for useful products and experimental kits. The LTS1 Laser Trip Sensor was developed with the intention of providing a fun and educational kit that can actually be used constructively upon completion.

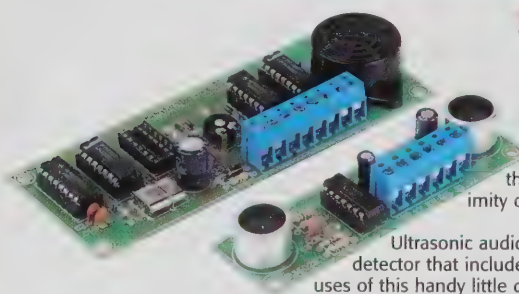
The kit comes with all you'll need to set up your own laser fence: the laser element (small keychain type high power laser pointer!), the PVC enclosure, and the laser detector with built-in Audible and Visible Alert indicators. (And yes, you can put the laser pointer on your keychain instead, and get thrown out of concerts, no problem!)

The LTS1 can be used in a number of different ways. The break-away circuit board gives the user the flexibility of remotely mounting the detector circuit (optionally powered with a standard 9 Volt battery) over 500 yards away without the need for mirrors. If mirrors are used, arrangements in a doorway or as a perimeter fence can almost guarantee detection of any unwanted guests.

For added functionality, the relay output (5 Amp rating) can be used to drive other devices such as an event counter, lights, or even camera modules! Operates from 9 - 18 VDC @ 90 to 100 mA. Detector portion can use a standard 9V battery (not included) with long life. Board dimensions: 4" L x 1" W (max component height: 5/8"). Includes a 6" length of 1/4" ID PVC to conveniently house and mount the board assembly. (Now all you need is a fog machine so you can see the laser beams just like those spy movies!)

**LTS1**  
**AC121**      **Laser Light Trip Sensor Alarm Kit**  
**12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$29.95**  
**\$9.95**



**KIT**

**Don't Hit It...  
Detect It!**

If you have problems parking your vehicle without running into things (like the garage, another car, a wall, etc!) then the Parking Radar kit is for you! Mount the sensor board on the rear of your car, truck, or trailer and it will detect the proximity of whatever you're getting close to!

Ultrasonic audio waves, outside the range of human hearing, are used to "measure" the distance! The sensor board is connected to the detector that includes an audible alarm. The proximity can be adjusted anywhere from 2" to 5' and has a detection angle of 5 degrees. The uses of this handy little detector are endless, and it will save you a lot of crumpled metal!

Running on 10-15VDC the Parking Radar is ideal for 12VDC vehicle power. Just connect a lighter plug cord and you're all set! The small sensor board measures 1.1" x 3.7". The main board measures 1.9" x 4.9". The boards can be custom installed in your vehicle, in your own case, or you can order the recommended enclosures below. From Velleman. (How come this costs a thousand or so bucks less than the "radar assist" option on a new car I just looked at?)

**K3502**      **Ultrasonic Parking Radar Kit**  
**G416**      **Recommended Case Set For Main Board**  
**G407**      **Recommended Case Set For Sensor Board**

**\$34.95**  
**\$8.95**  
**\$6.95**

## Microwave Motion Detector

- ✓ Great introduction to microwave basics
- ✓ Ideal for home alarms

**TOP  
SELLER!**

**Don't Cook... Detect Motion!**

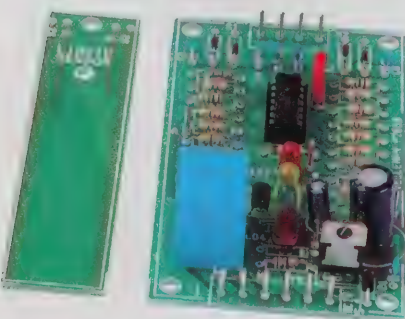
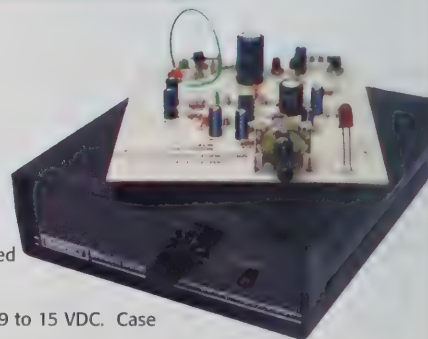
This unit sends out a microwave signal and looks for a return (a moving object that will reflect back some microwave energy) and then detects it. Since microwaves (no, you won't get cooked or burned by them!) are used - heat, light, sound or vibration will not affect the sensor!

This makes it ideal for car and home alarms, outdoor and garage light operators, animal in-your-garbage alarms, and tons more ideas limited only by your imagination. The MD3C is a great introduction to the basic principles of our SG7 "Speedy" Personal Speed Radar Gun and you can use it to investigate the properties of microwaves.

Kit includes detailed instructions, theory of operation, the custom case set shown, and lots of applications and hook-ups. Runs on 9 to 15 VDC. Case size: 5"W x 1 1/2"H x 5 1/4"D.

**MD3C**      **Microwave Motion Detector Kit**

**\$34.95**



**KIT**

**Check The Water Level Remotely!**

If you have a reason to monitor the level of water or other liquids, the K2639 Liquid Level Controller is just the kit! Not just an alarm like its little Mini-Kit brother the MK108, it gives you an LED display of LOW, MIDDLE, or HIGH levels. You can also have it turn on a pump or switch open a valve with a 240VAC, 3A relay output. Plus, there is an alarm output that you can selectively set to sound under a HIGH or LOW condition.

Runs on 12-14VAC or 16-18VDC. Relay output is rated 3A at 240VAC. Main controller board measures 4.1" x 2.4". Separate sensor board measures 4.1" x 1.0". If you're looking for a nice matching power supply, get the matching PWR25. Now there are no excuses for a wet basement! From Velleman. (Well, actually there IS an excuse for a wet basement... I never put one of these down there and what a mess!)

**K2639**      **Liquid Level Controller Kit**  
**PWR25**      **12VAC Power Supply**

**\$21.95**  
**\$14.95**

## Liquid Level Controller

- ✓ LED level indicators!
- ✓ Relay switch output!
- ✓ Selectable alarm output!





## Rat Blaster Varmint Repeller

- ✓ Covers over 3,000 square feet
- ✓ Programmable frequencies for optimum repulsion
- ✓ Comparable to commercial units costing \$150!
- ✓ Build in your own case or wall, or use our custom case!
- ✓ Runs on 9-15 AC or DC, or our 12VDC power supply



Why are you chasing  
away my friends?

**Eliminate Them...  
Without Any Harm!**



Sure, you've seen these things advertised before. Big claims and a huge price! Well we won't carry on about how you'll be able to keep Godzilla out of your garbage cans but we will say that this unit will do a nice job of keeping the neighborhood dog, cat, or deer away!

Here's the story. We had a problem at the boss's house keeping the deer out of the garden. The boss, being the electronic nut he is, bought one of these things and tried it. It worked pretty well so he planned to get another for protecting the shrubs but at \$150 a box he figured it was cheaper to build his own. Here it is, cheaper and better! We've increased the power, put in a top-quality transducer, upgraded the frequency range, and made it affordable!

The RB1 produces approximately four watts of high frequency audio. The output frequency is selected via a front panel control in three ranges from 15 kHz to 30 kHz. Instead of just generating a single constant tone like many competitive units on the market, the RB1 creates a warble tone that varies in frequency which really annoys those pests.

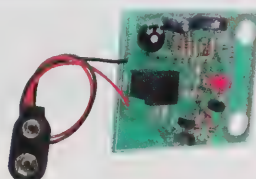
The unit (or transducer if mounted separately) is set outside facing the area desired to be protected. It then covers an area in the shape of an oval. The low frequency setting will cover an area of approximately 4000 square feet and is the best range for dogs. The high frequency setting covers an area of around 2,500 square feet and is the best range for cats. Deer respond well to the middle setting. As for Big Foot, we're not sure, other than he will be blurry, and that's a guarantee!

A lot of customers prefer to build it into their own case (or even a garage, shed, or barn wall!) so we offer the custom metal case shown as a separate option. We're not thrilled by the price increase in the custom case... but the manufacturing costs have skyrocketed for this! Sorry! Runs on 12 to 15 volts AC or DC, or use our green AC121 universal 12VDC regulated power supply. (Editors Note: This took care of the deer problems in my yard quite nicely, but didn't take care of my fenders and hoods on the road!)

RB1	Rat Blaster Rodent and Animal Repeller Kit	\$59.95
CRB	Matching Case & Knob Set for RB1	\$49.95
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency	\$9.95

## Voltage Wire Detector

- ✓ Find wires up to 4" away!
- ✓ LED indicator shows wire proximity!
- ✓ Compact PC board
- ✓ Runs on a standard 9V battery



**Find It Before The Nail Does!**

How many times have you driven a nail or screw into a wire behind a wall? Well, I don't know about you, but I certainly have! Especially those long drywall screws that love to cut right through a chunk of romex cable! Been there, done that!

SPECIFICATIONS	
Indication:	Flashing LED, buzzer optional
Sensitivity:	Adjustable, up to 3.9"
Supply Voltage:	9V battery
Dimensions:	2.2" x 2.5"

This detector kit will let you easily search for wires inside or behind walls, as well as track down interruptions. Simply hold the device around the area you wish to check and the LED will begin to flash when it gets near a wire with supply voltage. The faster the flashing, the closer you are to the wire!

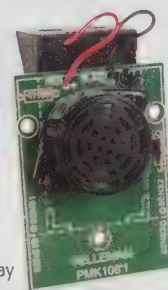
If you would prefer an audible cue, the kit is built to work with an optional PC mounted buzzer, as well. Board measures 2.2" x 2.5". From Velleman. (Yes, the wall was just finished, and yes, it was a 220V line for a baseboard heater, and yes, I had to open up the wall!)

K7101	Voltage Wire Detector Kit	\$12.95
SV412S	Optional PC Board Buzzer	\$4.95
G407	Recommended Case Set for K7101	\$6.95



## Water Sensor Alarm

- ✓ Sounds alarm when water is present!
- ✓ Can be remotely located!
- ✓ Includes buzzer alarm
- ✓ Runs on a 9V battery



**Find Out BEFORE You're Flooded!**

We've recently heard people say "what can you get for 10 bucks these days?" How about "peace of mind"! Pretty cheap price to pay for that, yet this little kit does just that!

Some of us have been there... the sump pump quits for whatever reason (it fails, the breaker blows, there are a lot of reasons) and because you don't live in your basement you're none the wiser. You just keep on putting around upstairs like nothing is wrong! Then you have to run downstairs to get something, and bingo, you step in a foot of water! The result? A flooded basement and a lot of damaged things that are in the basement! And once that happens, things never seem to be the same. Stored pictures are ruined, electronic things are ruined, and everything is musty and moldy.

Now build a cute little water sensor alarm to let you know! Simply mount the alarm in the area you want to sense water and the moment it touches the contacts the included alarm will sound. No wires, no external alarm system, nothing but this tiny little board just waiting to alert you! The sensor can be remotely located by cutting that section of the board if desired. I'm thinking 7 bucks is pretty cheap insurance! Runs on 9V battery (not included). Size: 1.8" x 2.8". From Velleman.

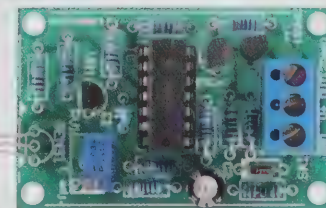
MK108	Water Sensor Alarm Kit	\$6.95
-------	------------------------	--------



## Temperature Sensor Module

- ✓ Measures -4° to +158° Fahrenheit!
- ✓ Highly accurate!
- ✓ Simple adjustment

**Quick & Easy  
Temperature Sensor!**



Looking for a general purpose, easy to interface temperature sensor for your projects? This is it! Whether you need to control heating and cooling of rooms or equipment, monitor temperatures in circuits, monitor your pool temperature, or simply put a temperature readout on your website, the K8067 fits the bill. With an accuracy of 2° over the full range!

The small board makes integration into your project or equipment simple, and the sensor device can be board-mounted or placed remotely. The temperature range is -20°C to +70°C (-4°F to +158°F). The output is a standard 0-20mA current loop for easy interfacing. Input voltage of 12VDC provides 0-5V output while an input voltage of 15VDC provides 0-10V output. Current consumption is 30mA max. Board measures 2.2" x 1.4" x 0.6". From Velleman. (If it's -4°F then what's the wind chill? I'm moving to Florida!)

K8067	Temperature Sensor Module Kit	\$19.95
-------	-------------------------------	---------

## Learn How AM & FM Transmitters Work!

Learn the theory of AM and FM broadcast transmitters the easy way, and then have fun with your very own station! Check them out on page 6!

FM10C

AM1C





## Ultimate 555 Timer/Oscillator

- ✓ Unlock the full potential of the classic 555 timer IC!
- ✓ Available in through-hole or SMT versions!
- ✓ Onboard output drivers
- ✓ Onboard Start and Reset switches
- ✓ Onboard Pulse Width control
- ✓ Onboard Rest Time control
- ✓ Interfaces with the R11 for "real-world" switching applications

*The BEST 555 timer kit on the market!*

First brought to market in 1971, the 555 timer has been a staple in the electronics world ever since, and the Ramsey UT5 timer kit has always been one of our top sellers. The UT5 provided a quick and easy way to harness the power of the 555 timer IC - a valuable tool for any electronics hobbyist! But there is only so much you can do with the UT5 before you start running into its limitations. We knew people wanted a kit that would let them do more with the 555 timer, so to that end, we present the brand new UT5A series kit.

This new series builds on the classic UT5 kit, but takes it to a whole new level! We've packed it with tons of features that you won't find in any other 555 timer kit on the market. You can configure it on the fly with easy-to-use jumper settings, drive relays, and directly interface all timer functions with onboard controls or external signals. All connections are easily made through terminal blocks. Plus, we've replaced the ceramic capacitor of other timer kits with a Mylar capacitor which keeps your timings stable over a much wider range of voltages!

Feature	UT5	UT5A
On Board Start Switch	Yes	No
On Board Reset Switch	Yes	No
Negative Signal Input	No	Yes
Negative Signal Input pull up resistors	No	Yes
Positive Signal Input	No	Yes
External Reset Input	No	Yes
External Control Voltage Input	No	Yes
On Board Pulse Width Control	Yes	Yes
On Board Rest Time Control	No	Yes
On Board Control Voltage Adjust	No	Yes
Output Buffer Circuits	No	Yes
Output Inductive Kick protection	No	Yes
Timer Output Inversion Select	No	Yes
Selectable Independent 3 to 24V Output	No	Yes
Multiple Components for Accurate Timing	No	Yes
Detailed Theory of Operation	No	Yes
5 to 15 Volt Supply Voltage	No	Yes
Terminal Blocks For Inputs and Outputs	No	Yes
Single Pole Double Throw Relay, Dry Contact	Timer IC output, 5 to 15 Volts - 100mA continuous	Buffered, 3 to 24V 200mA continuous, Invert, Selectable

Outputs  
Output Interfaces w/R11 120/240V 10Amps

Then, to separate the hobbyist from the advanced hobbyist (or the wanting to learn more hobbyist!) we duplicated the through-hole UT5A in a surface mount (SMT) version! If you want to learn SMT construction, or polish up your existing SMT techniques while exploring the ever popular 555 timer, the UT5AS is for you! Just check out the comparison table to see everything that's new and improved in the UT5A series!

### Input Requirements

Timer Power:	5 to 15 VDC
Output Circuit Power	3 to 24 VDC or Timer Power

### SPECIFICATIONS

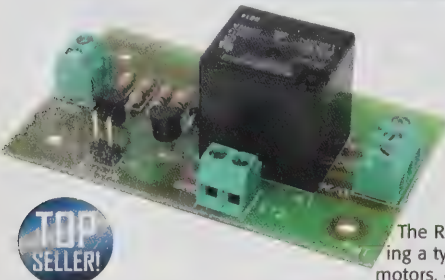
### Modes of Operation

Monostable	Most Pulse Widths from 110uS to 27.5 Minutes with included parts
Astable	Most Time Cycles from 210uS to 57 Minutes with included parts
Maximum Load:	200mA Inductive kick protected
Dimensions-UT5A:	2.5in (W) X 2.5in (L) X 1.0 (H); 63.5mm (W) X 63.5mm (L) X 25.4mm (H)
Weight-UT5A:	1.1 Oz, 0.0312 Kg
Dimensions-UT5AS:	1.5in (W) X 2.5in (L) X 1.0 (H); 38.1mm (W) X 63.5mm (L) X 25.4mm (H)
Weight-UT5AS:	0.8 Oz, 0.023 Kg

UT5A  
UT5AS

Ultimate 555 Timer/Oscillator Kit, Through-Hole Version  
Ultimate 555 Timer/Oscillator Kit, SMT Version

\$21.95  
\$29.95



KIT

*Convert The Digital World To The Real World With Ease!*

The R11 is designed to be a simple and practical interface between different types of electronic circuits. It's the perfect tool for interfacing a typical logic (or other DC) level to an onboard SPDT relay, which means it's a snap to connect almost any digital output to lights, motors, or any other electrical devices that require load switching of up to 240 Volts AC or DC and 10 Amps of current!

It takes a digital low (0.5 VDC or less) and high (+1 to +12VDC) and provides relay contact closures (SPDT) that can be either active high or active low. The R11 can be used in conjunction with almost any digital kit, including the TS1, VS1, UT5, TT7, TD1, IC116, Ramsey RF Wireless Link Modules, BD416, OM2, MD3, and the WTS1 just to name a few! It also works with many Velleman digital products, as well as countless other kits. There are literally millions of additional real world applications! The output of the R11 is a high current, normally-open/normally-closed set of dry contacts. The input signal can be nearly any type of logic level or other voltage level between 0 and 12VDC. Input level pull-up, pull-down, and current limiting resistors are available to meet the needs of almost any project. The R11 requires 12VDC at less than 60mA to operate. Relay contacts are rated 12A at 120VAC, 10A at 240VAC, 10A at 28VDC. Measures 1.5" x 2.5" with mounting provided on a 1" x 2" grid.

R11

Logic Interface Module

\$17.95

## 4-to-16 Line Decoder

- ✓ Jumper configurable
- ✓ Active high, active low, or both
- ✓ Works with your existing projects and applications

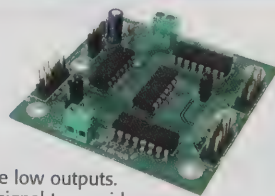
The BD416 is a 4 bit binary to 16 line decoder with active low outputs. Use it to interface to any 5 volt 4 bit binary output logic signal to provide a one of 16 line output signal. The output may be configured to either directly follow the binary input or to latch when the valid data signal input is applied. The valid data signal may be configured to be either active high or low. In the latched output configuration the BD416 may be configured to initialize in either a set, low output, or reset, high output, state. Configuration is accomplished using simple jumper block settings!

The BD416 may also be used with the RXD433A and RXD916 wireless receiver modules to provide a 1 of 16 output from the binary output. Each of the outputs is an active low, open collector signal able to drive an LED indicator or you can use our new R11, or OM2 interface circuits and drive relays, or other high power loads. The BD416 operates on 5VDC and is 2.5" x 3.75" with mounting holes on a 2" x 3" grid.

BD416 4-to-16 Line Decoder

KIT

\$27.95



## 16-to-4 Line Encoder

- ✓ Drive loads up to 150mA at 40VDC
- ✓ Active high, active low, or both
- ✓ Works with your existing projects and applications

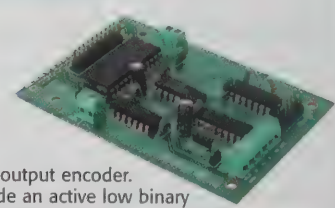
The BE164 is a 16 to 4 line or 8 to 3 line binary output encoder. The encoded output may be configured to provide an active low binary signal that continuously follows the input or is active only when data valid signal is activated. All inputs are active low and the output is configurable to be either active high or active low. An active high data valid signal is provided at the output. Input and output connections are via three 10 pin 0.1" DIP connectors.

The BE164 may be used with our TXE433 and TXE916 Wireless transmitters to provide encoded data inputs. You may also use it to provide a binary encoded signal to any device such as a computer that uses a 5 volt binary logic level. It is also designed to operate with our Digital Voice Messaging System, DVMS8BCD. A simple direct connection to the DVMS8BCD provides direct access to any of the up to 8 stored voice messages. All configuration is done using simple on-board jumper blocks. Runs on 5VDC and is 2.5" x 2.5".

BE164 16-to-4 Line Encoder

KIT

\$19.95







## Automatic VOX Voice Switch

KIT

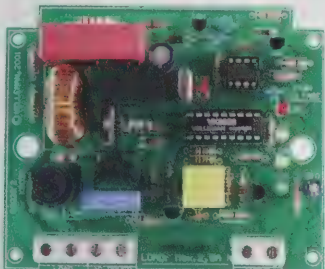
- ✓ Use your voice or noise to control!
- ✓ Directly switches relays or low voltage loads up to 100mA!
- ✓ Endless applications!

Our most popular Mini-Kit, the VS1 Voice Activated Switch (VOX) will provide a switched output when it "hears" sound. Use it to key a transmitter for hands-free PTT, turn on a tape recorder automatically when people are talking in a room, turn on lights, or anything else you can imagine... all controlled by the sound of your voice!

How about having your garage lights turn on when you beep your horn? The possibilities are endless! The output drives up to a 100mA load such as a relay, tape recorder control line, transmitter PTT line, etc. Runs on 6-12VDC for easy integration into any equipment. Board measures 2 1/2" x 1 1/2" x 1 1/4".

VS1 Automatic Voice Activated VOX Switch Kit

\$9.95



### Automatic Voice Control!



KIT

### The Ultimate Dimmer... With EPROM Backup!

Impulse switch, staircase light control, slow on/off dimmer, interval timer, and speed adjustment for fans are just some of the features you'll have at your fingertips when you build this dimmer kit!

Works with both resistive and inductive loads so you can control light bulbs, high-voltage halogen lighting, or low-voltage halogen lighting with a ferromagnetic transformer. Also

includes soft-start technology to prolong the life of bulbs, fault protection, independent delay times, and EEPROM memory backup to save settings in case of power failure. 2 delay times (5 seconds to 2 hours) can be programmed through the learning mode. Board measures 3.9" x 3.2" x 1.4". From Velleman.

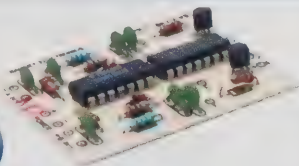
K8028 Multifunction Dimmer Kit

\$32.95

## Touch Switch

- ✓ Touch on, touch off, or momentary!
- ✓ Two circuits on one board
- ✓ Great CW Keyer

### 2 Separate Circuits!



The ultimate touch switch! Touch once - it's on, touch again - it's off, or use the momentary outputs that stay on only as long as touched.

Uses low power CMOS circuitry and functions on the principle of hum and noise pick-up when input is touched. There are two completely independent touch switch circuits on each board. It's like getting two for the price of one!

Will drive loads up to 100 mA such as a relay, bell, siren, etc. Includes project info for use as a CW keyer. Runs on 6-12VDC.

TS1 Touch Switch Kit

KIT

\$9.95

## Light Actuated Switch

- ✓ On-board SPDT relay!
- ✓ On at dusk, off at dawn
- ✓ Adjustable sensitivity

### Fully Automatic!



Tired of turning your lights on and off? Tired of paying the ever increasing cost of electricity because you forgot to turn them off in the morning? Consider it solved! The MK125 is a simple little kit that automatically senses light and automatically closes the on-board SPDT relay.

Light sensitivity is adjustable over a wide range, and a delay circuit prevents recycling. Relay contacts rated at 5A. Runs on 12VDC. Board measures 2.6" x 2". From Velleman.

MK125 Light Actuated Switch Kit

KIT

\$8.95

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V

\$9.95

## Universal Start/Stop Timer

- ✓ Delay up to 60 minutes!
- ✓ On-board relay
- ✓ Runs on 12VDC

### Start & Stop With Delay!

The K2579 is a miniature timer for any application that requires a start and stop function with a delay. Board mounted switches are provided for both start and stop.

Time interval is variable and adjustable from 0 to 15 minutes, and extendable to 60 minutes with a modification. LED status indicator is provided. Relay is rated at 2A/240VAC max. Runs on 12VDC. Board measures 1.5" x 2.7". From Velleman.

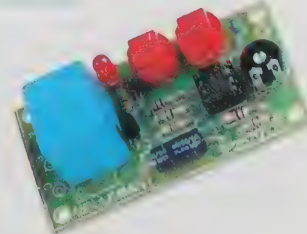
K2579 Start/Stop Timer Kit

AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$13.95

\$9.95

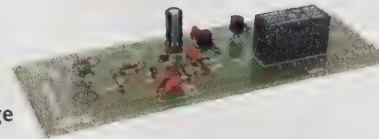
KIT



## RF Actuated Relay

- ✓ Automatically senses presence!
- ✓ On-board DPDT relay
- ✓ Protects against RF input damage

### Senses RF BEFORE The Damage!



This is just the unit you need when adding a preamp or power amp in line with an existing antenna.

It senses the RF power and closes an on-board DPDT relay which can be used to automatically switch in your added power amp or preamp. The relay is good up to 100W at VHF. Besides radios, many folks use one of these "lifesavers" in front of their expensive test equipment to prevent RF input damage!

Runs on 10-15VDC and senses power as low as 50 mW. Size: 1 1/2" x 1 1/2" x 4".

RFS1 RF Actuated Relay Kit

KIT

\$19.95

## Multifunction Relay Switch

- ✓ 14 different functions!
- ✓ 2 pre-programmed delays!
- ✓ Push button control!
- ✓ EEPROM storage!

KIT



### Build Your Own Switches!

This versatile relay switch is packed with features and can be used for a variety of control applications, timers, switching, flashing, interval, random switching, and more! Other features include learning mode for delays anywhere from 2s to 12 days, EEPROM for delay time storage in case of power failure, and on-board transient filter for the relay contacts! From Velleman.

K8015 Multifunction Relay Switch Kit

\$22.95

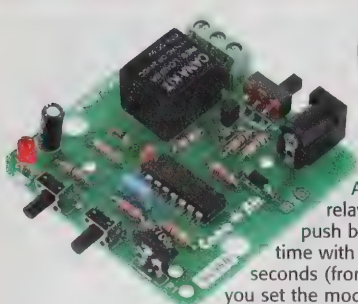
G410 Recommended Enclosure

\$6.95

#### SPECIFICATIONS

Operating voltage:	9-12VAC or 12VDC
Max load:	2.5A (275W at 110VAC)
Dimensions:	3.4" x 1.5" x 1.0"





KIT

Wired &amp; Tested

## Universal 1-Hour Start/Stop Timer

*When Time is of the Essence!*

- ✓ Adjustable from 1 second to 60 minutes!
- ✓ Built-in relay for easy integration with your projects!
- ✓ Start/Stop push buttons and second/minute switch onboard!
- ✓ The perfect experimenters kit!

A timer with unlimited applications! This timer is adjustable from approximately 1 second to 60 minutes, and also incorporates a built-in relay that can handle loads of up to 10A / 110V AC or 24V DC (5A / 220V AC) for easy integration into your applications. "Start" and "Stop" push buttons are onboard, along with a handy restart feature - just press the "Start" button while the timer is active and it resets! Easily set the time with the PC board mounted potentiometer and the "Second" & "Minute" mode switch. The mode switch allows you to adjust the timer in the seconds (from 1-60) and changing the mode multiplies that 64 times. For example, if you adjust the timer for 30 seconds in the "Second" mode, when you set the mode to "Minute", the timer will operate for 32 minutes (30 x 64 = 1,800 seconds). Supply Voltage: 12VDC. Relay Rating: 10A / 110VAC or 24VDC (5A / 220VAC). Dimensions: 2.34" x 2.25". From CanaKit.

CK158  
UK158  
BX158

Universal 1-Hour Start/Stop Timer Kit  
Universal 1-Hour Start/Stop Timer, Factory Assembled & Tested  
Custom Enclosure

\$17.95  
\$25.95  
\$9.95

## 2-Mode Hour/Minute Timer With Delay Option

KIT

Wired &amp; Tested

- ✓ Adjustable from 1 second to 2 hours!
- ✓ Built-in Relay for easy integration with your projects!
- ✓ Onboard LED indicators

*Dual Mode... With Delay!*



SPECIFICATIONS	
Supply Voltage:	12VDC / 200mA
Timer Adjustable:	"Minute" Mode - 1s to 2 min "Hour" Mode - 1 min to 2 hours
Output Relay:	10A / 110VAC or 24VDC (5A / 220VAC)
Dimensions:	2.34" x 2.25"

Check out this multi-purpose, highly versatile timer with countless potential applications! Adjustable from approximately 1 second to 2 hours, it offers both a normal mode of operation as well as a Cyclic mode with a 50% duty cycle. It also incorporates a built-in relay that can handle loads of up to 10A / 110V AC or 24V DC (5A / 220V AC) plus individual "Start" / "Stop" push button switches. The time adjustment is set through a PCB mounted variable resistor in conjunction with a "Second" / "Minute" mode switch for no-fuss adjustment.

When the timer is set to the "Minute" mode, the timer will operate for 64 times the measured time of the "Second" mode. For example: adjust the timer for 30 seconds in the "Second" mode, and when you switch to the "Minute" mode the timer will operate for 32 minutes (30 x 64 = 1,800 seconds). From CanaKit.

CK137 2-Mode Hour/Minute Timer Kit  
UK137 2-Mode Hour/Minute Timer, Factory Assembled & Tested  
BX137 Custom Enclosure  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$23.95  
\$29.95  
\$9.95  
\$9.95

## One-Shot PIC Digital Timer w/Relay

- ✓ Time with precision: 1-255 seconds, minutes or hours!
- ✓ Built in relay with screw terminals!
- ✓ Optional silk-screened enclosure available!

KIT

Wired &amp; Tested



The CK670 is a highly versatile and easy-to-build PIC digital timer. This kit will give you a precision one-shot timer based on a custom programmed Microchip PIC16F630 micro that ensures a high degree of accuracy and flexibility! The circuit lets you set the On time to with precision, anywhere between 1 to 255 seconds, minutes or hours through a set of onboard DIP switches. The timer also incorporates a 10A (110V AC or 24V DC) relay for easy connection, plus a DC adapter jack and screw-on terminal blocks for easy wiring of the relay contacts! Supply Voltage: 12VDC / 100mA. Output Relay: 10A / 110VAC or 24VDC (5A 220VAC). Dimensions: 2.34" x 2.21". From CanaKit.

CK670 One-Shot PIC Digital Timer w/Relay \$26.95  
UK670 One-Shot PIC Digital Timer w/Relay, Factory Assembled \$36.95  
BX670 Custom Enclosure \$9.95

## Cyclic PIC Digital Timer w/Relay

- ✓ Time with precision: 1-15 seconds, minutes or hours!
- ✓ Built in relay with screw terminals!
- ✓ Optional silk-screened enclosure available!

KIT

Wired &amp; Tested



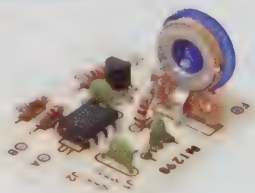
This PIC digital timer is similar to the CK670, but acts as a cyclic timer, repeating On-Off-On-Off, etc. The timer allows both the On and Off periods to be set independently to a precise value through the onboard DIP switches. Each switch can be set to a value of 1 through 15 and can be configured to be in Seconds, Minutes, or Hours. For instance, set the On period to Seconds, and the Off period to Hours. The On DIP switch can then be set to a value of 10, and the Off DIP switch to a value of 2, resulting in the timer being activated for 10 seconds, every 2 hours, indefinitely! Includes 10A (110V AC or 24V DC), DC adapter jack and screw-on terminal blocks for easy wiring of the relay contacts. From CanaKit.

CK670CY Cyclic PIC Digital Timer w/Relay \$26.95  
UK670CY Cyclic PIC Digital Timer w/Relay, Factory Assembled \$36.95  
BX670CY Custom Enclosure \$9.95

## Universal Timer

- ✓ Trigger or oscillator
- ✓ 555 timer IC design

*Learn & Use IC Switching...For \$10!*



Add a time delay, keep something on for a preset time, provide timing or clock pulses, or provide an audio tone. The UT5 does it all using the famous 555 timer IC. It uses it in three modes:

The Monostable mode can be used to provide a delay, turn a device on or off for a pre-determined period of time, or various timing signals. Bistable mode can be used to toggle a device between on and off or be used as a divide-by-two circuit. Astable mode is basically a square wave generator. It can be used for clock signals or even provide audio tones. The applications for this little gem are limited only by your imagination.

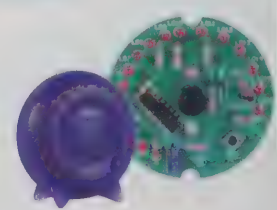
The UT5 operates on 5-15VDC and controls up to 100mA. Detailed manual included.

UT5 Universal Timer Kit \$9.95

## Electronic Kitchen Timer

- ✓ 1 minute to 1 hour timing!
- ✓ Simple one button operation!
- ✓ Audible and visual alarm!
- ✓ Discrete pre-alarm!

*For The Cookies We DO Like!*



What good is the built-in timer on your stove if you're not there in the kitchen? It isn't, and the cookies will be burnt! Exactly!

This modern kitchen timer will not only save the cookies but will be a fun project to build and use. Times anywhere from 1 minute to 1 hour. Single button makes it a breeze to use with the following settings: 1 to 10 minutes in one minute steps; 10 to 30 minutes in five minute steps; 30 to 60 minutes in 15 minute steps. Measuring a mere 3" x 1.3" this little timer can go in your pocket outside with you while the cookies are in the oven! Even includes a pre-alarm to get you back inside in time! Runs on 3 AAA batteries (not included). From Velleman. (Sorry, does not include the recipe for Ma Leo's famous chocolate chip cookies... that's a secret!)

MK128 Electronic Kitchen Timer Kit \$17.95





## Enhanced DTMF Control Interface

KIT

- ✓ Multiple user configurable modes
- ✓ Crystal controlled DTMF decoder
- ✓ Continuous 1 of 16 lines decoding of all 16 DTMF tone pairs
- ✓ Security feature for BCD output decoding of all DTMF tone pairs
- ✓ BCD output configurable to latch on tone reception or active only with tone in either secure or non-secure mode
- ✓ Input may be from any DTMF tone source (phone line or other clean audio source)
- ✓ Audio filtering to reject normal telco signals (ignores non-DTMF tones)



*Encode, Control, Create... All From DTMF Tones!*

Have you ever wished you could call home and turn on the lights late at night before you pull in the driveway? Finally, an easy way to remotely control just about anything with the touch of a button! The DCI2C offers control of up to 16 devices using your touch tone phone or any audio signal with DTMF tone signals. User programmable configuration provides latched or non-latched outputs, secure or non-secure access, as well as continuous control of up to 16 devices independent of configuration. A binary format output provides easy control of up to 16 devices.

While there are no power relays on the DCI2, you can now easily control several devices using DTMF tones in a secure environment with the BCD output. Use with our BD416 kit to decode the four BCD outputs to 16 separate output signals representing the appropriate input DTMF tone. The DCI2 also provides continuous decoding of all 16 tone pairs regardless of the security mode. Both outputs can be modified to provide latched or unlatched signals. With the addition of a few simple circuits (instructions included, of course!) you can control practically any device imaginable or simply use our RI1 Relay Interface kit!

The interface utilizes a commercial quality crystal controlled DTMF decoder for reliable drift free detection of all 16 DTMF tone pairs. Two levels of operation can be configured to provide secure or non-secured access. A highly selective audio filter rejects all tones other than legitimate DTMF tones for reliable false-free decoding.

The DCI2 is a highly adaptable product that is limited only by your imagination. Combined with an inexpensive answering machine, it gives you an elegant but powerful remote control system. Available as a kit, or factory assembled & tested, and operates on 12VDC or our AC121 green regulated power supply.

DCI2	DTMF Touch-Tone Control Interface Kit	\$62.95
DCI2WT	DTMF Touch-Tone Control Interface Kit, Wired and Tested	\$109.95
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency	\$9.95

## DTMF Touch Tone Decoder

- ✓ Decodes DTMF Touch Tones from telephones, radios, etc!
- ✓ 20mA output drives relays, LEDs, digital devices and more!
- ✓ Decodes 0 through 9, \*, #, plus A, B, C, D



*Your Phone Is Your Encoder!*

You can set up the TT7 for detection of any single digit, including the secondary A,B,C,D digits. When the decoder detects the selected digit it will provide a closure to ground for driving a relay, lamp, sounder, or other load of up to 20 mA. A commercial central office quality decoder IC chip is used, which means the TT7 is extremely reliable, fast, and sensitive! You may connect the TT7 directly across the speaker or detector output on any receiver, and we even detail how it may be connected directly to a telephone line.

If your needs are single function remote tone control, the TT7 is for you. For DTMF remote control applications use our DCI series. Runs on 5VDC. PC board measures 1 1/2" x 7/8" x 2 1/4".

TT7	DTMF Touch Tone Decoder Kit	\$24.95
-----	-----------------------------	---------

## DTMF Remote Control Interface

- ✓ User configurable security codes
- ✓ Control household lights from your cell!
- ✓ Confirmation tones for each command!
- ✓ Remote control from any DTMF device!

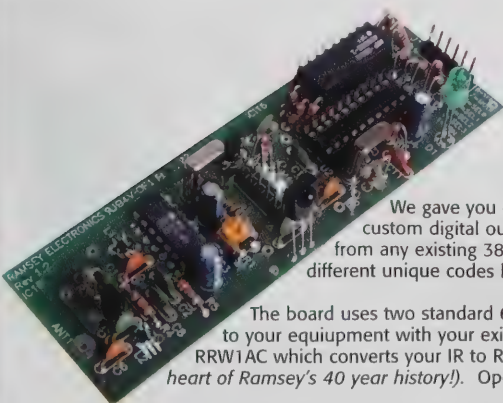


*Full Control From Any Telephone Or Cell Phone!*

This microprocessor controlled DTMF decoder fits the bill for multiple applications. Remotely control almost any device with the built-in relay circuitry. The DCI series unit continually monitors your phone line and looks for the proper user programmed security code. Once it is heard, the user may select which of the trigger relays to turn on or off. For your convenience, the DCI1C features four outputs.

Feedback tones from the DCI are then sent back over the line to confirm your selection. No more wondering if your commands are carried out as is commonly found with other similar devices! Now you can call home and when your answering machine picks up, control lights, security systems, or just about any number of other custom applications! Provides four 5 Amp (1250VA AC/150W DC) relay outputs, each with its own sure grip screw terminal. Requires 9-18VDC at 300 mA. Our standard AC121 110VAC power adapter is available.

DCI1C	DTMF Controller Interface Kit With Case	\$52.95
AC121	12VDC/1A Power Supply, 100-240VAC Green Level-V	\$9.95



KIT

*Create Any Digital Output!*

## Infra-Red Digital Remote Control Interface

- ✓ Generates a digital output from any IR remote button!
- ✓ "Learns" the signal from your existing IR remote controls!
- ✓ Plugs into your existing projects and applications
- ✓ The perfect experimenters kit!

We gave you on/off switch control with our ICI11 (above) but now we've taken IR remote control one step further! The ICI16 gives you a custom digital output from your IR remote control buttons! Using the same Motorola microcontroller brain as the ICI11, it learns the IR code from any existing 38 kHz IR remote controller. Once learned, a push of the button generates a 0-15 coded output on 4 lines depending on 16 different unique codes learned from the IR controller!

The board uses two standard 6-pin 0.1" center connectors for easy mounting, plug-in, and wiring. Tired of sitting there trying to find a line-of-sight path to your equipment with your existing remote control? Tired of people and pets in the way of the path? Want to get really creative? Use the ICI16 with our RRW1AC which converts your IR to RF. The ICI16 receives the RF and converts it to a 1 of 16 digital signal output! Just use your technical imagination (The heart of Ramsey's 40 year history!). Operates on 7-15VDC.

ICI16	Infra-Red Digital Remote Control Interface Kit	\$45.95
-------	--	---------





## Tone Encoder/Decoder

- ✓ Encodes and decodes 40 to 5000Hz!
- ✓ Drives any load up to 100mA!
- ✓ Compact size and easy installation



*Encode and Decode With The Same Kit!*

**KIT**

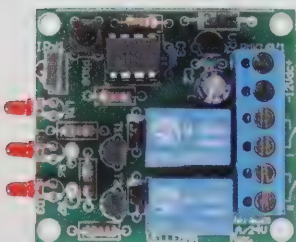


The TD1 was engineered to provide all your tone control needs on a single PC board! The unique design will simultaneously encode and/or decode any audio frequency between 40Hz and 5000Hz. If you want to go even lower, we provide the documentation to change one capacitor to go down to 10Hz!

This little board is great for 2-way radio "PL" tones, remote controls, tone burst FSK or anywhere tones are involved. Frequency is easily set with the precision 20 turn trimpot and the circuit uses a voltage regulator and Mylar cap for the ultimate in stability. The decoder output will drive any load up to 100mA, making it simple to connect to your equipment. Runs on 5-12 VDC and will drive up to 100 mA load. Encoder output provides approximately 1V P/P output to easily drive your application. PC board measures 1 1/4" x 1 1/2" x 1 1/2".

TD1 Tone Encoder/Decoder Kit

\$9.95



**KIT**

## 2 Channel IR Remote Receiver

*Program Two Functions!*

- ✓ Two channel relay output!
- ✓ "Learn mode" settings are stored in EEPROM
- ✓ Toggle or pulse selection for each channel

Looking for a slick little IR remote receiver for your custom remote control projects? This tiny little receiver gives you two separate channel functions, providing relay closures for each! Not bad for a tiny little 2" PC board!

Each control function can be set for either toggle or pulse mode to fit your specific application. Plus, all settings are stored forever in the built-in EEPROM! Channel and acknowledgement of reception are indicated on the attached LEDs. Relay outputs are rated at 120VAC at 3A or 24VAC/VDC at 1A. Runs on 12VDC at 0.75mA and measures a small 1.7" x 1.9" x .6". From Velleman.

MK161 IR 2 Channel Remote Receiver Kit

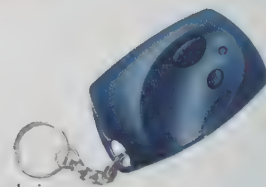
\$19.95

## 2 Channel Mini IR Key Fob

**KIT**

- ✓ Compact 2-button IR keychain!
- ✓ Dual LED's indicate operation and programming!
- ✓ Up to 50' range!

*Update Your Equipment To Use Key Fobs!*



You now start your car with them, unlock doors with them, and open your trunk with them... Key Fobs, they've become part of our every day life. Now you can bring the convenience of key fob control to any application with this awesome little kit! The tiny handheld transmitter fits on your keychain (or anywhere else you need it) and is a perfect mate to the IR receiver above. Easy channel switching (just hold down both buttons) lets you use multiple transmitters in the same area - up to 16 separate channels! A standard red LED lets you know when you are transmitting or switching channels. Powered by a 12V battery (e.g. VG23GA, GP23GA, etc. not included). Dimensions: 2.3" x 1.6" x 0.5". From Velleman. (You still have to set the groceries down to push the button!)

MK162 IR 2 Channel Mini Key Fob Kit

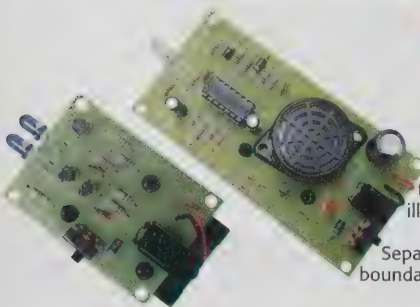
\$17.95

**KIT**

## IR Light Barrier Alarm

*Just Break The Beam!*

- ✓ Up to 13' range!
- ✓ Invisible light beam!
- ✓ Audible and visible alert



Create an invisible beam of light that will sound (and light) an alert whenever it is broken! Uses IR emitting LEDs for the transmitter to send a powerful beam up to 13 feet! Once setup and armed, a break in the IR beam will sound a built-in 85dB audible alarm and illuminate a red alert LED on the receiver.

Separate transmitters and receivers are provided and both run on standard 9V batteries (not included). Great for store entrances, setting boundaries, and science fair projects to demonstrate how IR light works.

Transmitter measures 2.2" x 1.6". Receiver measures 3.9" x 2.0". On/off switches are included on both. Because IR light is used, this is not recommended for outdoor use. From Velleman. (I'm putting one by my office door so I can look busy writing this catalog copy when the boss walks in!)

MK120 IR Light Barrier Alarm Kit

\$8.95

## IR Remote Control Checker

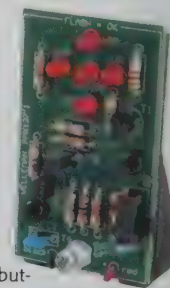
**KIT**

- ✓ Just point and check!
- ✓ Confirms IR signal generation!
- ✓ Provides peace of mind!
- ✓ Runs on a standard 9V battery!

*Check It Before You Wreck It!*

We've all been there, sitting on the couch or easy chair and the TV doesn't seem to respond to your remote control. First you smack it, then you hold it in the air and aim it closer to the TV... but the channel still won't change! At that point there's three options: get up and change the channel (ha, that will never happen), change the batteries and see if that works, or take another Xanax!

Before you go through all that, give yourself a treat and check the remote with this handy IR tester. Simply point your IR remote at the board, press a function button, and the 4 LEDs confirm proper IR receive! Runs on a standard 9V battery (not included). Measures 2.2" x 1.2" x 1.3". From Velleman. (I guess I forgot about option #4, throw the remote at the wall!)



MK137 IR Remote Control Checker Kit

\$6.95



**America's #1  
Source For  
Exciting,  
Educational & FUN  
Kits!**



RAMSEY ELECTRONICS®  
590 Fishers Station Drive  
Victor, NY 14564 USA

- ◆ **Build It!**
- ◆ **Learn It!**
- ◆ **Achieve It!**
- ◆ **Enjoy It!**

## It's Easy To Order!

**Payment** – Check, money order, and credit card (MC, VISA, American Express, Discover) are all accepted. If paying by credit card, please include the full card number, CVV2 number, and the expiration date. If you are paying by credit card, you must provide the billing address exactly as it appears on your credit card statement.

**Sales Tax** – NY residents must add appropriate sales tax unless a signed resale certificate accompanies your order.

**Prices** – Prices shown are those in effect at the time of publication. We work to hold prices firm, however prices are subject to change without notice. Current prices will prevail at the time an order is placed. Visit [www.ramseykits.com](http://www.ramseykits.com) for any last minute updates!

### **Shipping –**

**Continental U.S. customers** – We normally ship via UPS or USPS depending on the size and value of the order. If we are shipping via UPS you must provide a physical address, as UPS will not deliver to P.O. Boxes. Add \$7.95 for shipping, handling, and insurance on all orders. Premium 3rd day, 2nd day, Overnight, Overnight AM, and Overnight Saturday shipping is available. CALL 800-446-2295 FOR CURRENT RATES.

**Alaska, Hawaii, Puerto Rico, and APO's & FPO's** – Shipping methods and rates for these locations frequently vary. CALL 800-446-2295 FOR CURRENT RATES.

**Canadian customers** – Shipping methods, Customs requirements, and rates for Canada frequently vary. CALL 800-446-2295 FOR CURRENT RATES. Be aware, UPS shipments may be delayed in customs, therefore USPS is the preferred carrier. **Shipping rates do NOT include any international duty charges.**

**Overseas customers** – There are many shipping options, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Oversized & Heavy** – Items designated as Oversized & Heavy require additional shipping charges, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Returns** – Examine (do not build) any kit for up to 10 days. If not completely satisfied, return in the original packaging for a full refund. Kits that are partially built cannot be returned or refunded. Wired and tested items can also be returned if in their original packaging, suitable for resale within 10 days. Returns received after 10 days will be subject to a restocking fee.

**Manual Preview** – Looking at a kit and want to review it more closely? Our manual preview policy lets you purchase most of our manuals for \$5.00 (a few are more). Purchase price of the manual will be credited against your future associated kit purchase. You can also download most manuals (excluding the schematic!) at no charge from our website at [www.ramseykits.com](http://www.ramseykits.com).

**Kits  
Are  
FUN!**

**1-800-446-2295**

AM-FM BROADCASTERS, CAMERAS, TRANSMITTERS  
HOBBY KITS, AMATEUR RADIO, TOOLS...AND MORE

**ramseykits.com**





**CALL TOLL FREE 1-800-446-2295**  
**ONLINE ORDERING** [www.ramseykits.com](http://www.ramseykits.com)

RAMSEY ELECTRONICS • 590 Fishers Station Drive • Victor, NY 14564 • (585) 924-4560 • (585) 924-4886 Fax

*Note: Credit Card Order MUST have your phone number, and must be shipped to your credit card billing name and address!*

**ORDER FORM**

NAME \_\_\_\_\_ KEY CODE \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
PHONE ( ) - \_\_\_\_\_ E-MAIL \_\_\_\_\_

Qty	Model No.	Description	Price Ea.	Total

<b>SUBTOTAL OF ITEMS ABOVE</b> (minimum of \$10.00 except for manuals)			\$	
Standard U.S. Shipping <i>Includes Shipping, Handling, and Insurance (Best way ground)</i>			\$	7.95
Premium U.S. Shipping <i>3 Day Air • 2nd Day Air • Next Day Air, Saturday Overnight</i>			+	
Extended U.S. Shipping <i>Best way to Alaska, Hawaii, Puerto Rico, APO's &amp; FPO's</i>			+	
Canada <i>Delivery to Canada, best method or as requested</i>			+	
International <i>International shipping, best method or as requested</i>			+	
Oversized or Heavy <i>Items designated as Oversized or Heavy require add'l charges</i>			+	
NY Sales Tax <i>ADD your current NYS Sales Tax rate if you reside in NY State</i>			+	
<b>GRAND TOTAL</b> (including shipping)			\$	

Payment: Check ☐ Credit Card ☐ PayPal (Please Call To Order) ☐  
Credit Card # \_\_\_\_\_ CVV2 Code # \_\_\_\_\_  
Expiration Date \_\_\_\_\_ Signature \_\_\_\_\_

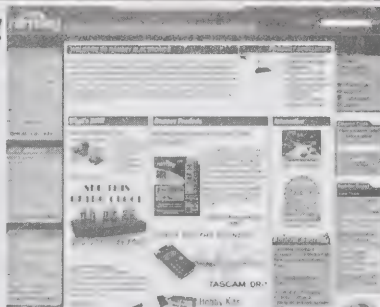
- Credit Card Order MUST have your phone number, and must be shipped to your credit card billing name and address!
- CVV2 Card Verification Code is the 3 digit code on the back signature line on Visa/MC/Disc and 4 digits on the front of Amex cards



**You Won't Believe The  
Special Deals And Really  
Neat Stuff At...**

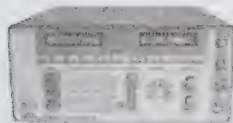
**www.ramseykits.com**

- ✓ Monthly Giveaways!
- ✓ Clearance Specials
- ✓ User Forums
- ✓ Kit Building Guides
- ✓ Downloads
- ✓ Live Weather
- ✓ Live Webcams
- ✓ A Whole Lot More!

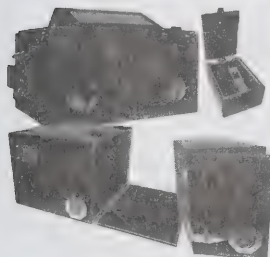


**Check Us Out Today!**

## **RAMSEY Professional Test Equipment?? YOU BET!**



**COM3010 Service Monitor**  
*Full Duplex, .1MHz - 1GHz!  
Full Features, Low Cost!*



**RF Shielded Test Enclosures**  
*Trust your EMI & RF testing  
to our patented features!*  
*Wireless Device Testing, Forensics  
Isolation, 802.11a/b/g/n, WLAN, WiFi,  
Cellular, PCS, GSM, 3G, 4G, 802.15,  
RFID, Bluetooth, Wibree, ZigBee...  
and a whole lot more!*

**www.ramseytest.com**



Name \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_

**ramsey**  
**PRIORITY**  
**RUSH ORDER**  
**ENCLOSED!**

**RAMSEY ELECTRONICS®**  
**590 Fishers Station Drive**  
**Victor, NY 14564-9744**



**Place  
Stamp  
Here!**





## Digital LED Thermometer

KIT

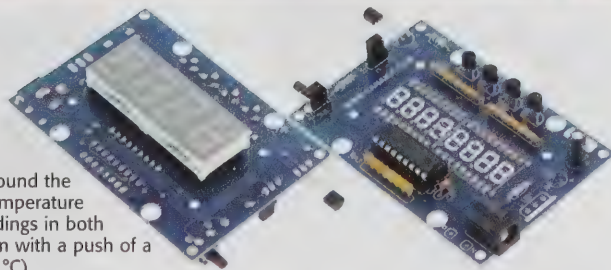
Wired & Tested

- ✓ Bright and eye-catching 4-Digit 0.56" 7-segment display!
- ✓ Easy toggle between Celsius and Fahrenheit!
- ✓ Temperature sensor can be wired remotely up to 325 feet away!
- ✓ Highly accurate and responsive PIC microcontroller based circuit!

### SPECIFICATIONS

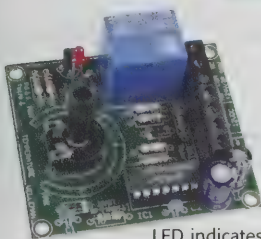
Supply Voltage:	Regulated 5VDC / 150mA
Temperature Range:	-67°F to 257°F (-55°C to 125°C)
Resolution:	+/- 1°F (+/- 0.5°C)
Dimensions:	3.25" x 2.25"

This high-brightness LED digital thermometer is based around the popular Maxim/Dallas DS18B20 High-Precision Digital Temperature Sensor and a Microchip PIC Microcontroller. It offers readings in both Celsius and Fahrenheit, and you can toggle between them with a push of a button! This handy kit boasts an accuracy of  $\pm 1^\circ\text{F}$  ( $\pm 0.5^\circ\text{C}$ ).



The on-board DC jack makes for easy power connections and an optional voltage regulator can also be added right on the board if you don't have a 5V DC regulated adapter. The DS18B20 temperature sensor offers a wide operating range of from -67 to 257 °F (-55 to 125°C) and if desired can be even be wired off the board and placed at another location (distances of up to about 325 feet/100 meters) using CAT5 or similar cable! From CanaKit.

CK127	Celsius/Fahrenheit Digital LED Thermometer Kit	\$29.95
UK127	Celsius/Fahrenheit Digital LED Thermometer, Factory Assembled & Tested	\$39.95
PSC5	Optional 5VDC Voltage Regulator	\$9.95



KIT

Control Temperature The Easy Way!

## Thermostat Control Module

- ✓ Temperature range 41°F to 86°F
- ✓ Relay output switching, 24V at 3A
- ✓ Runs on 12VDC at 100mA

If you're looking for an easy way to control the temperature of anything from a circuit, a heatsink, to a room, this little thermostat control module will do the trick! A built-in NTS temperature sensor is included, and can either be board mounted or remotely connected via the built-in terminal strip. The temperature range is 41°F to 86°F. Once adjusted to the desired temperature a built-in relay provides the control circuit. In addition a bright red LED indicates the state of the thermostat. The module runs on 12VDC at 100mA. The control relay is rated at 24V at 3A making it easy to interface with any of your circuits. The board measures 2.1" x 2.4" x 1.1". Temperature control is normally a hassle, use this little module and make it a breeze! From Velleman.

MK138	Thermostat Control Module Kit	\$8.95
-------	-------------------------------	--------

## Digital LED Thermostat/Thermometer with Relay

- ✓ 4-Digit LED 7-Segment display!
- ✓ Adjustable hysteresis!
- ✓ Switchable between either cooling or heating mode!

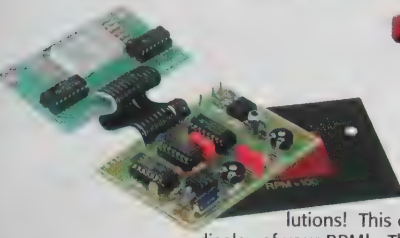
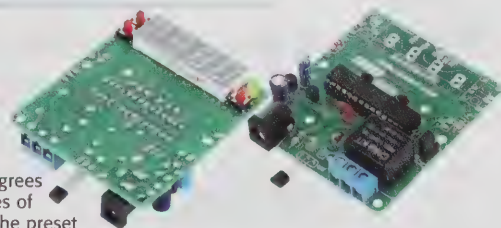
Ultimate Thermal Control!

Wired & Tested

This compact professional thermostat/thermometer offers a digital display that shows the current temperature in either degrees Fahrenheit or Celsius, plus allows you to set a target temperature that must be maintained! The thermostat has two modes of operation: Cooling or Heating. In Cooling mode, the thermostat will activate the relay when the temperature goes above the preset target, deactivate it again when the temperature falls below the target temperature. Conversely, in the Heating mode, the thermostat will activate the relay when the temperature falls below the preset target and deactivate it once the target temperature has been reached. It's that simple!

The design built around a Microchip PIC microcontroller that works in conjunction with a Dallas/Maxim DS18B20 temperature sensor. Adjustable hysteresis is also incorporated, so you can prevent wear and tear on your heating/cooling devices. All settings including target temperature are stored in non-volatile EEPROM memory so they won't be lost in the event of a power failure. The incorporated relay can handle loads of up to 10A at 110V AC or 24V DC (5A at 220V AC). Temperature Range: -67° to 257°F (-55° to 125° C). Supply voltage 12VDC or use our AC121 power adapter. Dimensions: 2.34" x 2.68". From CanaKit.

UK212	Digital LED Thermostat/Thermometer with Relay, Factory Assembled & Tested	\$46.95
-------	---	---------



KIT

The Easy Way To Display RPM...  
Or Simply Revolutions!

## Digital Tachometer

- ✓ 100 to 9900 RPM!
- ✓ 2 digit display
- ✓ Easy calibration!
- ✓ Includes front bezel
- ✓ Runs on 10-15VDC@200mA

What a simple, neat, and "custom" way to add a tachometer to your vehicle or any other application where you need to count revolutions! This digital tachometer includes two interconnected boards. One contains two bright 7 segment LED displays to provide a unique digital display of your RPM! The 2nd board is connected with a flexible ribbon cable to make installation a breeze in any vehicle or application. Range is 100 to 9900 RPM to cover anywhere from a slow idle to a lead foot (usually followed by a blown engine!). An attractive red filter front bezel is included to give you a perfect custom "built-in" look! Runs on vehicle voltage (10-15VDC) at 200mA.

The small main board measures 3.2" x 2.4" and the display PCB measures 3.2" x 1.8". The matching red filter bezel measures 2.8" x 3.5". If you're looking for a super looking tachometer for your vehicle, the K2625 does the trick. From Velleman. (This one isn't chrome and sticking out of the hood facing the driver like my SS396 was!)

K2625	Digital Tachometer Kit	\$32.95
-------	------------------------	---------

## Optically Isolated Interface Module

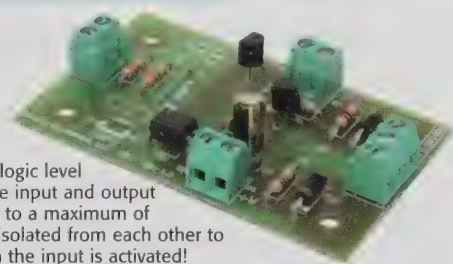
KIT

The Hobbyist's Problem And  
Headache Solver!

- ✓ 5000 VAC of isolation!
- ✓ Drives up to 150mA at up to 40VDC
- ✓ Works with your existing projects and applications

The OM2 provides an optically isolated interface between two devices. It can be used to convert nearly any AC or DC signal to logic level signals. It can also be used to activate a relay upon detection of an input signal. BUT the really great thing about the OM2 is the input and output are **totally isolated** from each other! Use virtually any voltage input level above 1.5 volts (as long as the input current is limited to a maximum of 60mA). The input can be a simple DC level or an AC signal with a frequency up to 250KHz. The input and output are optically isolated from each other to 5000 volts AC (rms), and the output can drive up to 150mA at up to 40VDC. It even provides active low and high outputs when the input is activated!

OM2	Optically Isolated Interface Module	\$16.95
-----	-------------------------------------	---------







## Clap On/Clap Off Relay Switch **KIT**

- ✓ Automatically senses presence!
- ✓ On-board SPDT relay
- ✓ Protects against RF input damage

*Clap On, Clap Off...  
Dodge Lawsuit!*

This clapper switch will activate its onboard relay when its sensitive microphone receives a sound such as a handclap. The relay will stay activated until the microphone receives another sound. The sensitivity of the microphone is adjustable, so no worrying if your clap is not powerful enough... or if it is too powerful! The circuit includes a relay that can handle loads of up to 10A at 110V AC or 24V DC. Dimensions: 3.76" x 1.79". From CanaKit.

CK252	Clap On/Clap Off Relay Switch Kit	\$20.95
UK252	Clap On/Clap Off Relay Switch, Factory Asmb & Tested	\$27.95



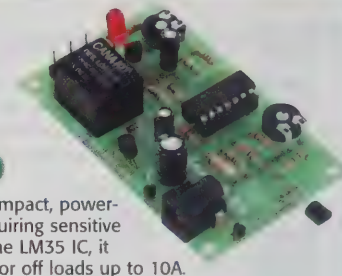
## Electronic Thermostat

- ✓ Control loads up to 10A
- ✓ Adjust temperatures 32-158°F
- ✓ Built-in relay for easy integration

**KIT** **Wired & Tested**

This handy little temperature control circuit is compact, powerful, and ready to implement into any project requiring sensitive automatic temperature adjustment! Based on the LM35 IC, it includes a built-in relay that allows it to turn on or off loads up to 10A. The circuit also incorporates separate trim potentiometers for easy adjustment of both temperature and hysteresis. Temperature adjustment can be made between 32 to 158°F and hysteresis between 0.9 to 3.6 °F approx. Dimensions: 3.00" x 1.82" Supply Voltage: 12VDC or 9VAC at 100mA. Relay Rating: 10A at 110VAC or 24VDC. From CanaKit.

CK112	Electronic Thermostat Kit	\$24.95
UK112	Electronic Thermostat, Factory Assembled & Tested	\$29.95
AC121	12VDC/1A Power Supply, 100-240VAC Green Level-V	\$9.95



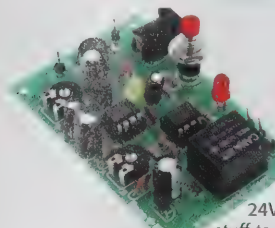
## 20 Minute Adjustable Delay Dual Timer With Relay

*Turn Anything On...  
Then Off... Automatically!*

**KIT** **Wired & Tested**

This circuit consists of two independent timers: a delay timer and an ON period timer, each individually adjustable from a few seconds to 20 minutes. What does that mean? Using this timer allows you to first turn on a device after a certain preset delay time (Timer 1) and then to turn it OFF after the preset ON period (Timer 2)! Endless convenient applications! The timer includes a relay that can handle loads of up to 10A / 110V AC or 24V DC. Supply voltage: 12VDC or 9VAC transformer. Dimensions: 3.05" x 19.2". From CanaKit. (If your brain isn't already coming up with a ton of cool stuff to do with this... think harder!)

CK249	20 Minute Adjustable Delay Dual Timer With Relay Kit	\$23.95
UK249	20 Minute Adjustable Delay Dual Timer With Relay, Factory Assembled & Tested	\$27.95



## Mini Digital Count Down/Up Timer w/LED Display and Relay

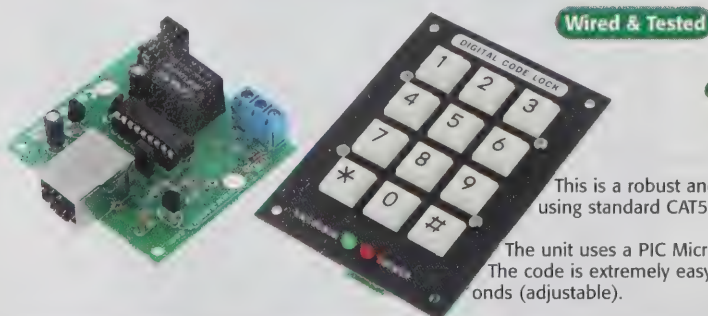
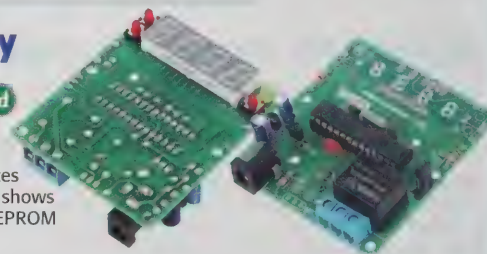
- ✓ Count Down (time remaining) and Count Up (time elapsed) modes!
- ✓ Adjustable from 1-100 minutes in 1s increments or 1-100 hours in 1m increments!
- ✓ Built-in relay for direct device control!

**Wired & Tested**

This digital count down / up timer is highly flexible, allowing you to set the required time period from 1second to 100 minutes in 1 second increments; or from 1 minute to 100 hours in 1 minute increments. It can be set to count either down (display shows remaining time), or up (display shows elapsed time). The timer stores the preset time and current settings in non-volatile EEPROM memory, which means the last preset time is easily recalled even if power is disconnected from the unit!

A bright LED display plus the three push buttons for control are right on the board, making it easily panel-mountable. All that, plus this timer includes a relay that can handle loads of up to 10A / 110V AC or 24V DC! Supply Voltage: 12VDC / 100mA. Dimensions: 2.34" x 2.68". From CanaKit.

UK258	Mini Digital Count Down/Up Timer w/LED Display and Relay, Factory Assembled & Tested	\$46.95
-------	--	---------



## CAT5 Code Lock Relay Switch With Keypad

*Cool AND Reliable  
Custom Security!*

- ✓ Build your own security!
- ✓ Up to 10 digit security codes!
- ✓ Built-in relay for electric lock control!
- ✓ Includes CAT5 for remote keypad placement!

This is a robust and reliable professional electronic code lock with an external keypad that can be mounted remotely using standard CAT5 networking cable with a standard RJ45 connector!

The unit uses a PIC Microcontroller and stores the selected code (up to 10 digits long) in nonvolatile EEPROM memory. The code is extremely easy to program - no jumpers required! Built-in time lock (relay) will remain open from 1 to 9 seconds (adjustable).

Also includes a buzzer for audible feedback and as well as Locked / Un-Locked LED status indicators. A silk screened panel for the keypad is included, perfect for wall-mounting, and the built-in 5A relay can easily be connected to control any electric lock or strike! Supply Voltage: 12VDC / 100mA. Dimensions: Main Board - 2.34" x 2.21" Keypad - 2.20" x 1.51". From CanaKit.

UK510	Code Lock Relay Switch With Keypad, Factory Assembled & Tested	\$59.95
BX510	Optional Enclosure for Main Board	\$9.95

## Handheld Wind Speed Anemometer

### SPECIFICATIONS

- ✓ Wind speed range: 0.44 to 67.0 mph
- ✓ Wind speed resolution: 0.1 for all units of measure
- ✓ Temperature range -21.8 to 138.2 °F (-29.9 to 59 °C)
- ✓ Temperature resolution: 0.2°F (0.1°C)
- ✓ Records and displays max and average wind speed since power up
- ✓ Beaufort scale bar graph, 0-12
- ✓ Wind chill display in °F or °C
- ✓ Runs on one CR2032 lithium button cell for 12 months life
- ✓ Measures 7" x 4" x 1.63"

**Wired & Tested**

*No More Guessing...  
KNOW The Wind Speed!*

We've all seen them on TV... the professional weather talent (now known as meteorologists!) standing in the middle of the hurricane report holding up their wind meter clocking the fastest wind gusts. Usually that's just before they get blown to the ground along with their producer and camera crew! Well now you can have the same professional wind speed meter on a hobbyist budget!

This meter goes beyond just displaying the current wind speed! Besides displaying the realtime instantaneous wind speed it also stores and records the maximum gust AND average since it was powered up! Realtime wind speed is also displayed on a Beaufort wind scale ranging between 0 and 12. Whether in the middle of a storm, on your boat, hiking, the EA3010 is your answer. (Stop the boat first!)



EA3010	Handheld Wind Speed Anemometer	\$34.95
--------	--------------------------------	---------



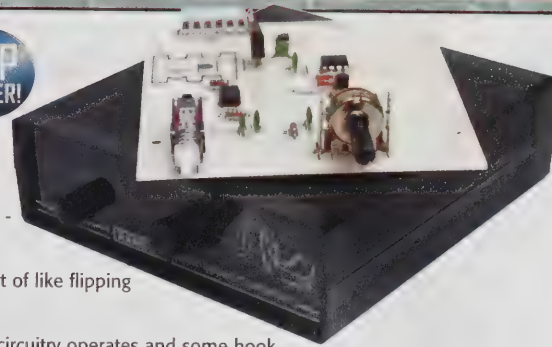


## DC Motor Speed Control

- ✓ Real pulse width modulation for accurate, stable motor control!
- ✓ Controls DC motors from 3 to 50 volts - up to 10 Amps!
- ✓ Includes attractive matching case set!



Full Power...  
Any Speed!



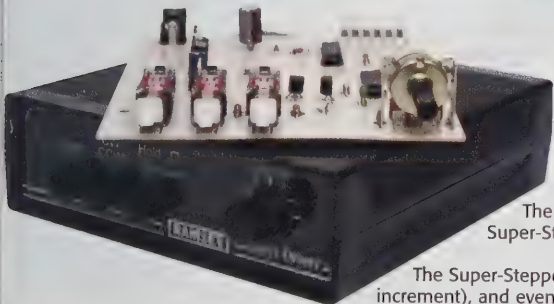
Controlling a DC motor's speed is not as easy as just varying its supply voltage. The motor loses torque (power) as the voltage is lowered and it finally stops rotating. The MSC1C uses a technique known as "Pulse Width Modulation" - PWM - to control speed. This is the same system used on electric cranes, buses and subway cars.

With PWM the motor receives full voltage whenever energized - however, the duration of the voltage changes; it's sort of like flipping an on/off switch very rapidly! The motor rotates smoothly and with full power - no matter what the speed.

The MSC1C will control DC motors from 3 to 50 volts at up to 10 amps! Complete instructions detail how the PWM circuitry operates and some hook-up ideas. Assembly takes only an hour or two. Kit operates on 6 to 15VDC and controls motor supply of 3 to 50 volts. Includes our custom case set measuring 5"W x 1 1/2"H x 5 1/4"D. (To our friend that tried to use this to control 480V/100A industrial motors... sorry about the melted case!)

MSC1C DC Motor Speed Control Kit With Case

\$34.95



Finally...A Stepper For All  
Those Surplus Motors!



## Stepper Motor Controller-Driver

- ✓ Controls direction, step size, and power to the motor!
- ✓ Output drives 5 to 15 volts!
- ✓ Uses Motorola Stepper Motor Driver IC Chip
- ✓ Includes matching case set!

The motors are top quality but how the heck do you drive them without shelling out a fortune? Easily, with the Ramsey Super-Stepper! Build an accurate positioner, X-Y controller, plotter or even a Robot!

The Super-Stepper will drive almost any stepper from 5 to 15 volts. You'll be able to control direction, speed, step size (rotational increment), and even power-down the motor after rotating it. An on-board clock generator is provided for easy hook-up-and-go operation or you can externally drive the kit for more exotic control.

We give complete details and ideas for additional uses. Put those versatile, first rate (and cheap!) motors to work with this exciting kit. Includes the matching black custom case set. Operates on 5 to 15 VDC. Case size 5"W x 1 1/2"H x 5 1/4"D. (The first, and still the most popular stepper controller!)

SMD1C Stepper Motor Driver Kit With Case  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$39.95

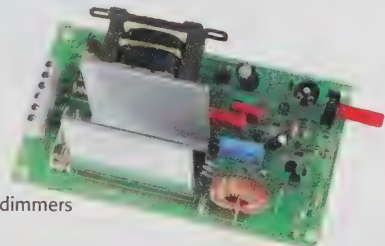
\$9.95

## AC Motor Speed Controller

- ✓ Load 24-240VAC at 5.5 amps!
- ✓ Input voltage 110-240VAC!
- ✓ Speed range 5-95%
- ✓ Low RFI



Adjust Speed But Maintain Torque!



This controller was designed to control AC motors with carbon brushes, anything from drills to vacuum cleaners to saws. Unlike normal dimmers there is a phase-cut only once per period.

### SPECIFICATIONS

Voltage Supply:	110-240VAC
Load Voltage:	24-240VAC, 5.5A maximum
Speed range:	5-95% of rated motor speed
Dimensions:	5.1" x 3.0"

The moment of cutting determines the speed, which can be adjusted from 5-95%. Thanks to this control, this kit provides high torque even at low speeds! Not just for 110VAC and 220VAC motors, this kit can also be used for low voltage (24VAC) AC motor loads. The supply and load circuits are electrically isolated from each other for both safety and reliability. Unlike a lot of AC controllers, RFI is suppressed to eliminate noise and interference. AC power input is 110-240VAC. Load voltage is 24-240VAC. Measures 5.1" x 3.0". From Velleman.

K2636 AC Motor Speed Controller

\$38.95



Wired & Tested

## 4A Dual Bi-Directional Motor Driver

- ✓ Control dual 2A motors or one 4A motor in bridged mode!
- ✓ Simple to control with standard TTL logic!
- ✓ Great for robotics applications!
- ✓ Current sense outputs!
- ✓ External diode bridge for output!
- ✓ 4 LED directional indicators plus LED power indicator!

Packed With Motor  
Control Features!

This dual bi-directional motor driver is based on the very popular L298 Dual H-Bridge Motor Driver Integrated Circuit and allows you to easily and independently control two motors of up to 2A each in both directions. It is ideal for robotic applications and well suited for connection to a microcontroller, requiring only a couple control lines per motor.

It can also be easily controlled with simple manual switches, TTL logic gates, relays, etc. 4 directional LEDs (2 per motor) tell you at a glance which motor is spinning which direction, and an additional power LED tells you when the unit is operating.

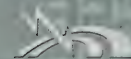
Other features include a built-in heat sink to prevent overheating, screw-terminal connectors, and eight Schottky EMF-protection diodes. Two high-power current sense resistors are also included to allow monitoring of the current drawn on each motor through your microcontroller! As if this wasn't enough, the onboard user-accessible 5V regulator can also be used to supply any additional circuits requiring a regulated 5V DC supply, and the circuit offers a bridged mode of operation for bi-directional control of a single motor of up to approximately 4A! Supply / Load Voltage: 6-35VDC. Output Power: up to 2A Each or 4A bridged. Dimensions: 2.50" x 2.50". From CanaKit.

CK1122 4A Dual Bi-Directional Motor Driver Kit  
UK1122 4A Dual Bi-Directional Motor Driver, Factory Assembled & Tested

\$29.95

\$39.95





## High Power Motor Speed Controllers (PWM)

- ✓ Control the speed of a DC motor without sacrificing torque!
- ✓ Soft-Start feature for extended motor life!
- ✓ Available in 15A, 30A, and 50A models!

These powerful Pulse-Width-Modulation (PWM) DC motor speed controllers provide continuous current to your DC motor or other DC load. Models are available to handle up to 15 amps, 30 amps, or a whopping 50 amps!

Thanks to a digital microcontroller based (PIC) design and highly efficient High-Power MOSFETs for cooler operation, these controllers will give you all the torque you need at any speed!

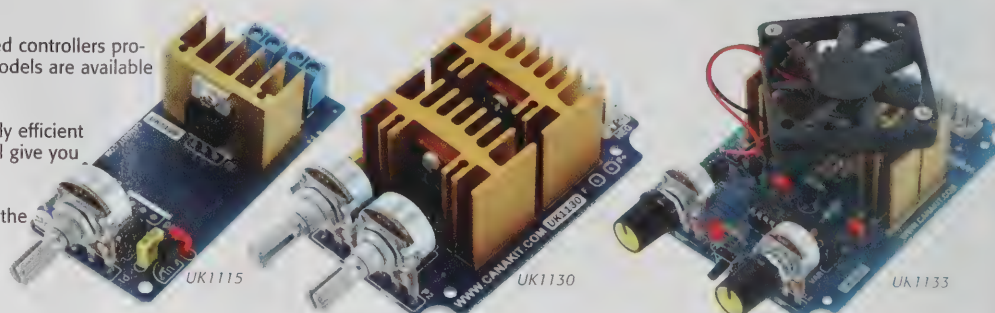
They can operate in either Fixed or Variable frequency modes - the fixed frequency mode runs the controller at 100 Hz, and in the variable frequency mode of operation the frequency can be adjusted from 244 Hz to 3.125 KHz. Duty cycle is fully adjustable from 0% to 100% in both modes.

### SPECIFICATIONS

Supply/Load Voltage:	6-24VDC (12VDC recommended)
Max Continuous Current:	15A/30A/50A @ 100Hz
Duty Cycle:	Adjustable from 0-100%
PWM Duty Cycle Range:	0-100%
Frequency:	100 Hz or 244Hz to 3.125KHz
Dimensions:	2.98" x 1.41" / 3.02" x 1.88" / 4.03" x 2.82"

UK1115	15A Motor Speed Controller, Factory Assembled & Tested
UK1130	30A Motor Speed Controller, Factory Assembled & Tested
FAN12V	Optional Fan for UK1115/UK1130 (UK1133 Includes Fan)
UK1133	50A Motor Speed Controller, Factory Assembled & Tested
UK1133ACY	Optional LCD Module for UK1133

\$27.95  
\$34.95  
\$9.95  
\$59.95  
\$17.95



Wired & Tested

Great for HHO, DC/LED Light Dimmers, Heating Control, etc.!

TOP SELLER!

The controllers also offer a built-in soft-start feature that greatly reduces the mechanical stress on the motor, not to mention the electrodynamic stress on the attached cables and battery - this means longer life for the whole system!

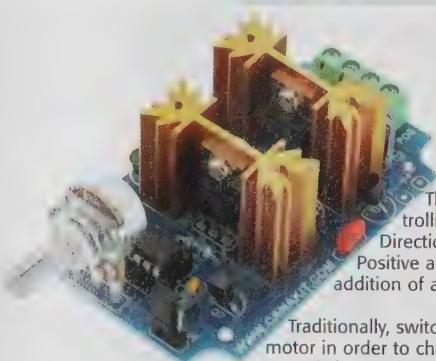
An optional fan is available for the UK1115 and UK1130 models, and is recommended for continuous operation at maximum power or for high frequency at high current applications. The UK1133 comes pre-equipped with a fan, and can also accept an optional LCD Display Module that displays current frequency and duty cycle. From CanaKit.

Wired & Tested

## 7A Bi-Directional Motor Speed Controller (PWM)

The Ultimate Bi-Directional Motor Controller!

- ✓ Center-click potentiometer
- ✓ Includes 2 large heat sinks
- ✓ Unique features!



This unique bi-directional DC motor speed controller is based around a Microchip PIC microcontroller at the heart of the circuit controlling a full H-Bridge power stage using four high-power efficient MOSFETs. The controller allows you to control both the Speed and Direction of a DC motor using a Pulse-Width-Modulated (PWM) DC voltage with a Duty Cycle fully adjustable from 0 to 100% (both Positive and Negative DC output). It can deliver a maximum continuous current of about 7A out of the box, and up to 10A to 15A with the addition of an optional fan and reinforcement of PCB tracks!

Traditionally, switches are used to reverse the polarity of the voltage applied to a DC motor in order to change the rotation direction. However, this method requires use of DPDT switches and causes the voltage applied to the motor to suddenly change from full positive to full negative. The sudden change while the motor is spinning leads to a high level of mechanical stress on the motor, as well as high current surges that can cause damage to any electronics in the path. This circuit is different!

Using a full H-Bridge circuit, the solid-state design of this motor speed controller does not use any mechanical switches, and it allows control of both speed and direction through a single potentiometer. At its center position, the motor will be forced to stop (i.e. it brakes), as opposed to a floating/coasting state, and the motor terminals will be grounded.

Turning the potentiometer clockwise causes the motor to start spinning slowly in the positive direction, with increasing speed up to the maximum supply voltage at its maximum position. Turning the potentiometer in the counter-clockwise direction will cause the motor to spin in the reverse direction, again starting slowly up to a maximum negative supply voltage. As an added option, the controller allows for selection of two operating PWM frequencies: 100 Hz or 200 Hz. From CanaKit.

UK1125 7A Bi-Directional Motor Speed Controller (PWM), Factory Assembled & Tested

\$39.95

<b>SPECIFICATIONS</b>	
Supply/Load Voltage:	6-24VDC (12VDC recommended)
Max Continuous Current:	7A @ 100Hz
Duty Cycle:	Adjustable from 0-100% in both directions
PWM Duty Cycle Range:	0 to +/- 100%
Frequency:	100Hz or 200Hz
Dimensions:	3.02" x 1.88"

## 5A Motor Speed Controller (PWM)

- ✓ LED brightness to indicate speed
- ✓ Adjustable speed via built-in pot
- ✓ Compact size for easy integration

KIT

Wired & Tested

Powerful Control in a Compact Package!

TOP SELLER!

This DC motor speed controller uses the popular 555 Timer Integrated Circuit to generate a Pulse-Width-Modulated (PWM) output voltage with adjustable duty cycle in order to control the speed of a DC motor without sacrificing torque.

### SPECIFICATIONS

Supply/Load Voltage:	6-16VDC (12VDC recommended)
Max Continuous Current:	5A @ 140Hz
Duty Cycle:	Adjustable from 1-99%
Frequency:	Approximately 140Hz
Dimensions:	1.77" x 1.18"

Incorporating a high power MOSFET with a heat sink, this controller can easily provide a continuous current of 5A to your DC motor or other DC loads such as high-power LEDs or LED strips for dimming applications.

The circuit also includes an LED speed indicator - the brightness varies in proportion to the relative speed of the motor, giving you a handy indicator of the current speed. The PWM frequency is approximately 140 Hz, with the Duty Cycle adjustable from approximately 1% to 99%. From CanaKit.



CK1102  
UK1102

5A PWM Motor Speed Controller Kit  
5A PWM Motor Speed Controller, Factory Assembled & Tested

\$14.95  
\$22.95



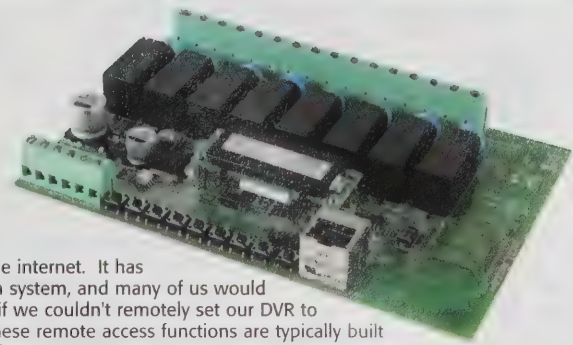


## 8-Channel Ethernet Controller



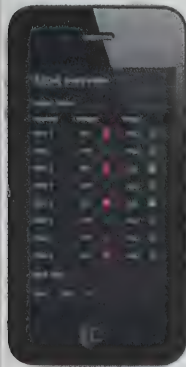
Wired & Tested

**Remotely Control and  
Monitor Your Equipment  
From The Internet!**



- ✓ 8 separate relay controls!
- ✓ Built-in web interface for easy operation!
- ✓ User defined TCP server port!
- ✓ Static or DHCP IP address!
- ✓ Sends email at power-up and event changes!
- ✓ Multiple user authentications
- ✓ On-board LCD display

With the rapid growth of technology, we have begun to see remote access and control of higher end devices via the internet. It has become commonplace these days to see remote access of your PC, remote access and control of your home alarm system, and many of us would be lost without the capability to set our DVRs at home from a remote location. Just imagine, where would we be if we couldn't remotely set our DVR to record Honey Boo Boo because we forgot to at home! (*Editor's comment.... probably better off!*) However, all of these remote access functions are typically built into the specific devices and similar remote control of user defined equipment has never been feasible... until now!



Now you can easily control and monitor up to 8 separate circuits via the standard Ethernet network in your home or office. Connection wise it couldn't be simpler. The controller functions as an IP based web server, so it can be controlled by any internet browser that can reach your network! There are no drivers or proprietary software required, just access the controller like any web page from your PC, laptop, or even your smartphone! Security is assured allowing up to 4 separate user credentials. The controller can be set to a specific static IP within your network subnet or can be set to DHCP (auto negotiate). The controller can even be programmed to send you an email to notify and confirm power up and status changes!

To simplify the connection of your equipment to the controller, 8 separate and isolated relay outputs are provided! This gives you internet or network control of up to 8 separate functions. No need to worry about interfacing a logic high or logic low, or burning up the interface! The applications are endless! From something as simple as turning on and monitoring lights at your house with a normal latched closure to advanced control of your electronic gadgets, radio equipment, or even your garage door!

Each relay contact is rated at 12A at 30VDC or 16A at 230VAC. Each of the 8 channels has built-in timer and scheduler programs for day, weekend, working days, every day, and every day except Sunday. Relay control functions are programmable for on, off, or pulse (1-99 seconds, 1-99 minutes, or 1-99 hours). In addition to control functions, the web interface also displays and confirms the status of each channel. Each channel can be custom labeled to your specific function name.

The controller operates on 12VDC or 12VAC at 500mA. If you are building the controller into a commercial or industrial control equipment rack, a standard DIN rail enclosure is also available. (*Give us a call, or check our website at [www.ramseykits.com](http://www.ramseykits.com) for availability.*)

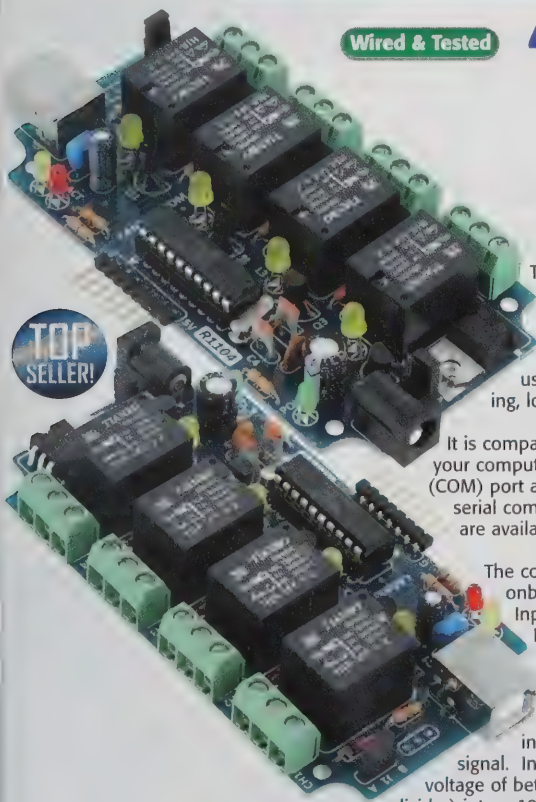
VM201 8-Channel Ethernet Controller, Factory Assembled & Tested  
B8006 DIN Rail Enclosure for VM201 Controller  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level V Efficiency

### SPECIFICATIONS

Channels: 8, separate relay outputs  
Format: IEEE 802.3 compatible Ethernet, 10Mbps  
TCP/IP: IPV4, static or DHCP  
NETBios: User defined name  
Server: TCP, SNTP, email  
TCP Port: User defined  
Display: On-board LCD, time or network status  
Labels: User defined for input and all outputs  
Users: Administrator plus 3 users  
Timers: 28 times max  
Contacts: 12A@30VDC, 16A@230VAC x 8  
Power: 12VDC, 12VAC, 500mA  
Mounting: PC board or optional DIN rail enclosure

Available  
January 2013!

\$169.95  
\$54.95  
\$9.95



Wired & Tested

## 4-Channel USB Relay Board With 6-Channel A/D Interface

- ✓ Individually configurable I/O channels!
- ✓ Compatible with Maxim-Dallas DS18B20 1-Wire temperature sensors!
- ✓ USB control for versatile custom programming!
- ✓ 4 separate relay control outputs for easy interface to your equipment!

**The Ultimate USB Interface And Controller!**

This professional quality USB relay controller and data acquisition module allows computer controlled switching of external devices, plus full bi-directional communication with the external world using the USB port of your computer.

The perfect solution for Data Acquisition applications! The controller is very flexible and can be used for a wide range of custom applications, including weather stations, temperature monitoring, logging and control, etc.

It is compatible with both Windows and Apple OS X, as well as various Linux flavors. When you plug it into your computer, it appears as a USB CDC (Communications Device Class) device that creates a Virtual Serial (COM) port allowing easy communication with the board through any programming language that supports serial communications (VB, VB.NET, C#, C, C++, Perl, Java, etc). A complete set of easy to use commands are available for complete control of all relays, I/O channels and sensors!

The controller also features four onboard relay outputs with a current rating of 10A each. Also onboard is a 6-channel Input/Output interface, with each channel individually configurable as Digital Input, Digital Output, Analog Input (10-bit Resolution), or Temperature Sensor (Dallas-Maxim 1-Wire DS18B20 series).

In Digital Input/Output modes, each channel can support a TTL compatible or ST (Schmitt Trigger) input (depending on the channel) or a 5V output signal. In Analog Input mode, each channel can convert a voltage of between 0 to 5V (or higher voltage using a voltage-divider) into a 10-bit digital representation.

### SUPPORTED COMMANDS

RELX.ON  
RELX.OFF  
RELX.TOGGLE  
RELX.GET  
RELS.ON  
RELS.OFF  
RELS.GET  
CHX.ON  
CHX.OFF  
CHX.TOGGLE  
CHX.GET  
CHX.SETMODE  
CHX.GETANALOG  
CHX.GETTEMP  
CHS.ON  
CHS.OFF  
CHS.GET  
CHS.SETTEMPRES  
SETID  
ABOUT

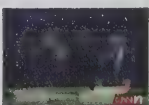
### SPECIFICATIONS

Supply Voltage: 12VDC (For Relay Operation Only)  
Number of Relays: 4  
Number of I/O Channels: 6  
Relay Rating: 10A / 100V AC or 24VDC ( 5A / 220VAC) (Resistive Loads)  
A/D Converter Resolution: 10-bit  
Dimensions: 4.11" x 2.14"

Finally, in Temperature Sensor mode, each channel can be connected to a Maxim/Dallas DS18B20 series 1-Wire Digital Temperature Sensor (sold separately)! From CanaKit. (*Who would have ever thought we'd come to this after watching Mr. Gates' introduction to USB fail to the blue screen of death on live TV in 1998! Go ahead, Google it!*)

UK1104 4-Channel USB Relay Board With 6-Channel A/D Interface, Factory Assembled & Tested  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$59.95  
\$9.95







Wired &amp; Tested

**Fully Automatic, Just  
Go Off-Hook!**

## Automatic Telephone "Ring Down"

- ✓ Instant off-hook ringdown access between two telsets
- ✓ Private full duplex intercom with selectable ringdown
- ✓ Instantly generates call on offhook, no dialing!
- ✓ Test ringing, answering, and signal-path functions of any telecom device

What is a telephone ring down, you may ask? They have been used for years as dedicated communications paths between two standard telephone sets. Over a single pair, with a phone at either end, merely going off hook with one phone immediately rings the other phone. When picked up you have a complete intercom path to talk. No dialing necessary! What are they used for?

Well, on the intercom or communications side they are commonly used for elevator phones, guard post hotlines, door entry phones in homes and offices, and on commercial job sites for rugged intercoms. But that's just the beginning!

They can also be used to test ringing, answering, and signal path conditions of devices, two-wire off premises extensions, PABX to Key System tie lines, and more. Ringing pattern is selectable to continuous ring; 1 on 1 off; 2 on 2 off; 2 on 4 off. Runs on 12 VAC at 500 mA (Power Transformer is included) or 20-28 VDC at 300 mA.

If you work on telephone equipment or are just looking for an ultra reliable telephone, the QLRD1 can't be beat! Measures 5/8 x 4 1/4 x 2 1/2 inches and is totally encapsulated in UL 94V-0 flame-resistant epoxy resin for long, reliable operation. (I used to install ring-downs with rotary dial 500's! I guess I'm REALLY dating myself!)

QLRD1

Automatic Telephone Ring Down, Factory Assembled &amp; Tested

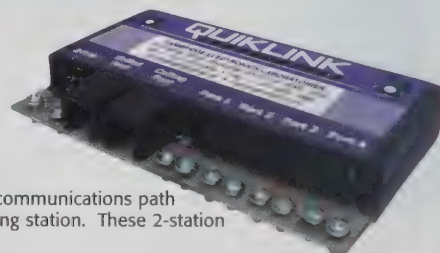
\$89.95

## Call-All-Stations "Ring Down" Extender

- ✓ Extends your ring down to multiple stations
- ✓ Any off hook rings all stations
- ✓ Meets legal requirements for backup communications!
- ✓ Compatible with standard and electronic telephones
- ✓ Runs on 24 VDC or 12VAC

Wired &amp; Tested

**Calling All Stations...  
Calling All Stations!**



The QLRD1 above is the ultimate (and very popular) telephone ring down. As described, it provides an ultra reliable dedicated communications path between two standard telephones while providing an automatic ring of the called station by merely going off hook with the calling station. These 2-station ring downs have been used for years.

But now the plot thickens! What if you needed to have multiple stations in the path? What if you needed up to 4 stations to simultaneously ring with an off hook of any one station? No problem with the new QLRD4 Call-All-Station Extender! Add it to the QLRD1 Ring Down and you now have a complete 4 station automatic ring down. If any station of the 4 goes off hook, it rings the other three stations. When a ringing station goes off hook to answer, a full duplex intercom path is established between all 4 stations!

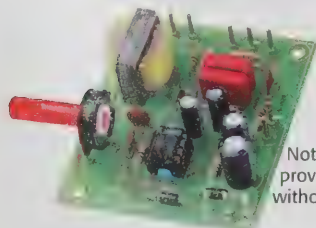
It gets even better! With both units designed to run on 24VDC, the pair can provide the legal requirement for some public locations (ski lodges, etc.) to have a battery backed emergency communications system between several points. Use standard gel cells, telco batteries, even two car batteries in series to provide a complete stand-alone system. Use AC chargers or even solar chargers to keep the system charged. The extender can also be run on the 12VAC power source from the QLRD1!

The extender is compatible with standard and electronic telephone sets. Just connect the stations, use modular RJ-11 cables to connect to the QLRD1, provide 24 VDC, and you're all set. Just like the QLRD1, the extender measures 5/8 x 4 1/4 x 2 1/2 inches and is totally encapsulated in UL 94V-0 flame-resistant epoxy resin for long, reliable operation. Makes it easy to mount in a small outdoor call box or other suitable enclosure.

QLRD4

Call-All-Stations Ring Down Extender, Factory Assembled &amp; Tested

\$99.95



**Drives Speakers Or Mixers!**

Not a speakerphone, but a high performance isolated input amplifier that connects directly to a telephone line. Unlike a lot of amplifiers, this one provides both speaker output and line output. Speaker output is perfect for "group listen" applications with standard telephones for group gatherings without the inconvenience and interruption of vox operated speakerphones.

The K4900 also features line level output designed to be connected to the aux input of any standard audio mixer or amplifier. This makes it perfect for radio stations, home broadcasters, and larger applications that need to connect their phone line into their systems. Features a standard isolation transformer input for zero loading of the phone line. Speaker output is a half watt into 8 ohms. Line output is 0dB (-775Vrms). The circuit runs on 7-10VAC or 9-12VDC at 150mA. Board measures 2.5" x 2.1". This unit can be built into existing equipment, or as a stand alone amplifier with the optional G416 housing. From Velleman. (Group listen is great, no speakerphone interruptions, no VOX clipping, yet everyone in my office can hear!)

K4900  
G416

**Telephone Amplifier Kit  
Recommended Case/Housing For K4900**

**\$14.95  
\$8.95**

## Group Listen Telephone Amplifier

- ✓ Connects directly to a phone line!
- ✓ Speaker and line outputs
- ✓ High performance, small size

## When In The Area...

If you're an electronic hobbyist, have an interest in our unique products, and find yourself traveling through the Rochester, NY area, feel free to stop in!

Likewise, if you are local, and simply want to "run down the street" to pick up your next kit, our friendly and knowledgeable CSR staff welcomes your visit!

We're located in Victor, NY, we are 5 minutes away from exit 43 on I-90 or exit 29 on I-490 East.







*Kit Planes Magazine...  
"Puts You In The Pilot's Seat!"*

Tune into the exciting world of aviation and learn the circuits at the same time with the AR1C Aircraft Receiver! As the feature article in Kit Planes Magazine said "It Puts You In The Pilot's Seat"! Listen to the airlines, big business corporate jets, hotshot military pilots, local private pilots, control towers, and other interesting and fascinating air-band communications. You'll hear planes miles away as well as all local traffic and control towers.

The AR1C features smooth varactor tuning of the entire air band from 118 to 136 MHz. An extremely effective AGC and superheterodyne circuitry make it a super performing unit. Variable squelch mutes the receiver between conversations. Audio output jack drives any standard speaker or headphone. Includes our custom case & knob set as shown for a great looking finished receiver! Operates on 9 VDC battery (not included). Case measures 5"W x 1 1/2"H x 5 1/4"D.

AR1C Aircraft Receiver Kit With Case

\$49.95

## FM Broadcast Band Receiver

- ✓ Standard FM receiver with larger tuning range of 70 to 110 MHz!
- ✓ Ideal for FM wireless mics, SCA programming, or standard FM broadcasts
- ✓ Demodulated audio output for driving our SCA1C decoder

With a frequency range of 70 MHz to 110 MHz, the FR1C has become extremely popular for receiving the standard FM broadcast band (88-108 MHz) as well as large portions on each side. It's great for bug monitoring or detection and receiving SCA broadcast outside of the band. Unlike most FM receivers, the FR1C includes a separate demod output (unfiltered) to drive SCA decoders including our SCA1C SCA Decoder below. Also makes a great mate to our FM10C FM Stereo Transmitter learn the basics of both FM transmitters and receivers!

The sensitive front-end features one microvolt sensitivity with a standard 10.7 MHz IF. An FM detector IC is used along with varactor diode tuning for optimum performance. Audio output is rated at 250mW and will drive any 4-45 ohm speaker or headphone (not included). Runs on a standard 9VDC battery (not included). Includes our matching custom case set, measuring 5"W x 1 1/2"H x 5 1/4"D.

FR1C FM Broadcast Band Receiver Kit With Case

\$47.95



*How Do They Get That  
Commercial Free Music?*

Believe it or not, they get it off the local FM radio station with a special decoder! Now you can build your own decoder and tap into the wealth of programming available to those "in-the-know"! Programming available runs the gamut from stock quotes to rock music, from easy listening to all news. These services are "hidden" in subcarriers riding along with the standard FM radio station's usual programming. The decoder connects to the detector output (unfiltered audio) on an FM receiver. If your receiver does not have such an output, consider our FR1C FM Receiver above! Tune into what you've been missing, try the SCA1C. Includes a custom case set to match the FR1C receiver above. Runs on a standard 9VDC battery (not included). Case measures 5"W x 1 1/2"H x 5 1/4"D.

SCA1C SCA Decoder Kit With Case

\$49.95

## Speech Scrambler & Descrambler

- ✓ Full duplex operation allows scrambling and descrambling at the same time
- ✓ Bypass mode provides quick change from direct audio to descramble

Communicate in total privacy over your radio! This is the popular SS70C descrambler/scrambler that you've read about in all the Scanner and Electronic magazines. The technology used within the unit is known as speech inversion which is compatible with many police department systems; hook it up to your scanner speaker terminals and you're in business. (However, always be sure to check with your local authorities to ensure that you're not straying into any unlawful communications reception.)

The SS70C is full duplex in operation - you can scramble and unscramble at the same time. Easily configured for any use! Easy to build since all complex circuitry is contained in a custom ASIC chip which provides clear, clean audio. Powered by 9 to 15VDC, with 3.5mm mini phone type input/output jacks. The included case measures 5"W x 1 1/2"H x 5 1/4"D.

SS70C Speech Scrambler/Descrambler Kit With Case  
SS70WT Factory Assembled & Tested SS70C With Case And Power Supply  
AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency

\$49.95

\$79.95

\$9.95



*Learn It, Build It...  
Listen To The World!*

Here's a complete shortwave radio guaranteed to inspire awe in any listener. Imagine tuning in CRI (China Radio International) or other shortwave services and stations with just a few feet of antenna. This very sensitive (about a microvolt!) receiver is a true superhet design with AGC and plenty of speaker volume. Smooth varactor diode tuning allows you to tune any 2 MHz portion of the 4 to 20 MHz frequency range, and the kit conveniently runs on a 9 volt battery (not included). Our matching custom case and knob set gives your radio a finished, polished look. Amaze yourself and others - see how you can listen to the world on a receiver you built in an evening and say "I built it myself!" Drives any speaker or earphone. Included case measures 5"W x 1 1/2"H x 5 1/4"D.

SWL Shortwave Receiver Kit With Case

\$47.95

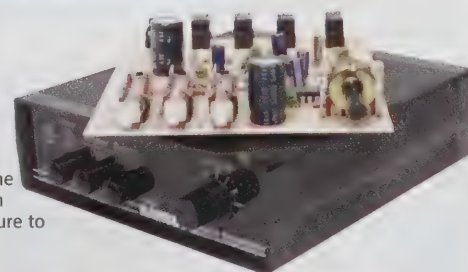


*Perfect For  
"Out Of Band" Listening!*



## SCA Subcarrier Decoder

- ✓ Tunes entire SCA subcarrier band, 50 to 100 KHz
- ✓ Features both speaker and line level audio outputs
- ✓ Simply plugs into our FR1 FM broadcast receiver or tap into the detector in any FM receiver



## SWL Short Wave Receiver

- ✓ Tunable over 2 Mhz bandwidth anywhere in the 4-20 MHz SWL band!
- ✓ Superhet design with AGC!
- ✓ Supersensitive front-end!



## Digital Tuned High Performance Aircraft Receiver

- ✓ Rock solid dual conversion PLL receiver!
- ✓ Airport runway lighting controller output!
- ✓ Full band scanner mode
- ✓ 4 user memory scanner banks, 20 frequencies each
- ✓ Full band skip scanner mode
- ✓ Adjustable skip scanner timing
- ✓ Internal front panel speaker
- ✓ External antenna input, speaker out, headphone out
- ✓ Stylish and shielded metal enclosure

**Wired & Tested****KIT**

**TOP  
SELLER!**



***The Ultimate & Affordable Aircraft Receiver...  
Even Controls Runway Lights!***

**THE LEGACY CONTINUES!**

Continuing the legacy of our famous AR1 we decided to design the ultimate aircraft receiver kit. Now you're not limited to an all band receiver or scanner that has substandard performance in the AM aircraft band. Instead, you can have a super performance receiver designed specifically for the best aircraft reception possible! To begin with, we designed it with the latest technology, utilizing a rock stable synthesized PLL dual conversion receiver. We gave it superb image and adjacent channel rejection to allow you to lock onto the signals you want and not to be bothered by those you don't!

### ADVANCED FEATURES!

Once we got the RF portion designed we took a close look at the features desired in such a receiver. We gave it a neat 2x8 line LCD display to show you all the functions. Control of modes and setups is obtained through the front panel controls and confirmed on the LCD display. On/Off/Volume and Squelch controls are also provided on the front panel. We even gave it a front panel speaker in case you stack the lighting controller or something else on top of it!

So far we've described the ultimate aircraft receiver that's not only the perfect field monitor for a hangar or airport manager's office but for the serious enthusiast as well. Can it get any better than that? It sure can!

## CONTROL RUNWAY LIGHTS!

The top request we've had for a professional aircraft receiver was to embed automatic runway lighting control. Consider it done! The lighting controller follows the standard protocol for remote runway lighting. The pilot "keys" his microphone on the local CTAF channel for the specified number of times. All you need to do is set the receiver for the lighting control mode and then make sure the squelch is closed and will open on a suitably strong signal. Typically the number of "key" as follows: 3 events, 25% brightness; 5 events, 50% brightness; and 7 events turn-on duration to your needs.

And what happens in the event of a local power failure or interruption to the AR2? Absolutely nothing! All receiver settings and all lighting control settings are saved in the internal memory. The rear panel lighting control output of the AR2 connects to our AR2L to interface with individual runway lighting control circuits.

As we do with all of our kits, a detailed instruction manual not only leads you through the step-by-step construction and assembly procedures, it teaches you the circuit theory as well. Learn all about RF receivers and how a dual conversion PLL radio works! You'll be proud to tell your friends that you built this outstanding aircraft receiver!

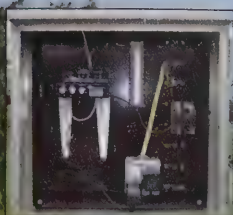
<b><u>SPECIFICATIONS</u></b>	
Frequency Range:	117.975 MHz to 137.000 MHz 25kHz steps
Receiver Type:	Dual Conversion PLL
IF Frequencies:	10.7 MHz & 450 kHz
Receiver Sensitivity:	Less than 1 uV across the band
Image Rejection:	Greater than -80 dB
Adjacent Ch. Rejection:	Greater than -40dB
Scanner Banks:	4, 20 frequencies each
Audio Output:	1 watt, 8 ohms
Light Controller Output:	3 events, 5 events, 7 events output to controller
Power Requirement:	13.8-15VDC, 500mA
External Antenna:	BNC female, rear panel
Dimensions:	5.55" W x 6.45" D x 1.5" H



AR2L  
Runway Lighting  
Controller

Includes the matching case and knob set, plus power supply. For the aviation professional that is not interested in building the receiver, the AR2 and the lighting controller are also available factory assembled and tested, ready to go. Just plug it in and you're all set. *(I can't get this thing off my desk, now I'm addicted to listening to Rochester approach!)*

AR2	Synthesized Aircraft Receiver Kit With Case, Antenna, and AC Power Supply	\$199.95
AR2WT	Factory Assembled AR2C With Case and AC Power Supply	\$269.95
AR2L	Plug-In Runway Lighting Controller Interface Kit With Case & Power Supply	\$59.95
AR2LWT	Factory Assembled AR2LC With Case and AC Power Supply	\$99.95



AR2 & AR2L Mounted in an outdoor enclosure with 110V lighting relay controls





**KIT** **Wired & Tested**

**PATENTED!**

**Monitors The Entire  
Aircraft Band For Activity...  
Without Any Tuning!**

## Passive Aircraft Monitor Receiver

- ✓ Monitors the entire aircraft band without tuning!
- ✓ Passive design, can be used onboard aircraft, no local oscillator, generates and creates no interference whatsoever!
- ✓ Great for air shows!
- ✓ Patented circuit and design!

**TOP  
SELLER!**

### INCREDIBLE PATENTED DESIGN!

For decades we have been known for our novel and creative product designs. Well, check this one out! An aircraft receiver that receives all nearby traffic without any tuning. It gets better... there is no local oscillator so it doesn't produce, and can't produce, any interference associated with all other receivers with an LO.

That means you can use it onboard aircraft as a passive device! And what will you hear? The closest and strongest traffic, i.e. the plane you're sitting in! How unique is this? We have a patent on it, and that says it all!

### NO TUNING, MONITORS THE ENTIRE BAND!

This broadband radio monitors transmissions over the entire aircraft band of 118-136 MHz. The way it works is simple. Strongest man wins! The strongest signal within the pass band of the radio will be heard. And unlike the FM capture effect, multiple aircraft signals will be heard simultaneously with the strongest one the loudest! And that means the aircraft and towers closest to you! All without any tuning or looking up frequencies! So, where would this come in handy?

SPECIFICATIONS	
Frequency Range:	118 MHz to 136 MHz
Receiver Type:	Patented Passive Detector
IF Frequencies:	None!
Receiver Sensitivity:	Less than 2 uV for detectable audio
Audio Output:	700mW, 8-24 ohms
Headphone Jack:	3.5mm stereo phone
External Antenna:	Headphone cord coupled
Power Requirement:	9VDC battery
Dimensions:	2.25" x 2.8" PC Board 2.5" x 4.6" x .9" Case
Weight:	4 oz. with battery

1. At an air show! Just imagine sitting there listening to all the traffic as it happens, even the unknown frequencies!
2. Onboard aircraft to listen to that aircraft and associated control towers
3. Private pilots to monitor ATIS and other field traffic during preflight activities (saves Hobbs time!)
4. Commercial pilots to monitor ATIS and other field traffic as needed at their convenience
5. General aircraft monitoring enthusiasts
6. Avionics service technicians to quickly verify transmitter go/no-go operation

### NO LOCAL OSCILLATOR, NO INTERFERENCE!

Wait, you can't use a radio receiver onboard aircraft because they contain a local oscillator that could generate interfering signals. We have you covered on that one. The ABM1 has no local oscillator, it doesn't, can't, and won't generate any RF whatsoever! That's why our patent abstract is titled "Aircraft band radio receiver which does not radiate interfering signals." It doesn't get any plainer than that!

### THE HIT AT THE AIR SHOW!

What about an air show? The ABM1 is the perfect solution to communications monitoring! A lot of unknown frequencies are used between the ground and each plane flying. Listen to air-to-air, the air boss, PA talkthrough and the stunt planes with ease! With a normal receiver you need to know the frequency and tune into it. The ABM1 simply hears the activity as it occurs, perfect for an air show... should be standard equipment for all the spectators!

### THE PILOT'S DREAM COME TRUE!

Then there are the private and commercial pilots! A lot of private pilots rent aircraft. With an ABM1 they can listen to field traffic and ATIS broadcasts before firing up the aircraft avionics; this saves on Hobbs time (inactive rental time!) and is convenient! Same with commercial pilots. Your access to ATIS and other broadcasts can be as close as your flight bag, briefcase, or pocket!

### SIMPLE TO USE!

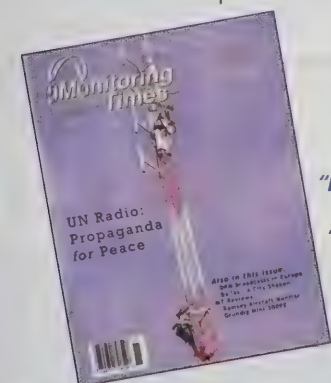
The receiver is in a compact case complete with a belt clip. Just plug your favorite pair of headphones or the provided set of ear buds into the receiver, turn it on, and you are now monitoring all local aircraft! A squelch control is even provided to mute background noise and interference! The receiver runs on a standard 9VDC battery (not included). You will hear all nearby aircraft, ground transmissions, local control towers, and any other traffic within the frequency range! Here in Rochester while I'm writing this catalog page I'm hearing local aircraft overhead calling Rochester Approach and Cleveland Center, and just heard the local News Chopper!

### EVERYTHING INCLUDED, AVAILABLE AS A KIT OR READY TO GO!

Even with its compact design, we engineered the ABM1 kit version for easy construction by the electronic hobbyist. Through-hole parts are used for all customer assembly. Several SMT components are part of the circuit, and they are pre-installed at the factory! We also realized that this receiver will be popular with aircraft enthusiasts that really don't have the time or ability to build an electronic kit. Therefore our engineering staff went into overdrive and designed a similar version using an all-SMT design as a factory assembled and tested unit. This unit features additional shielding only available with SMT design to reduce adjacent channel overloading. Whatever your choice is, both versions keep you in touch with the entire band with flying colors!

Where's the antenna you ask? The headphone wire is your antenna! We even discuss a couple of component changes you can make to optimize performance with other than normal lengths of headphone wires. A professional set of stereo ear buds is included with the ABM1 to get you listening quick! You can also use your favorite set of Walkman type headphones with the ABM1.

If you're a private pilot, commercial pilot, airport worker, aircraft enthusiast, attend air shows, or spend a lot of time in airports or onboard aircraft, the ABM1 is for you. The handy case has a built-in belt clip and measures 2.5" x 4.6" x .9". (If I had an Icon for "Super Top Seller" it would be right here!)



**Monitoring  
Times**

**The ABM1...Reviewed in Monitoring Times**

Author Bob Grove reviews the Ramsey ABM1 Passive Airband Monitor...

*"I can't see the planes anywhere, but the ABM1 can hear them, and obviously from many miles away"*

*"Ramsey provides a nice manual with an introduction to air-band monitoring, which contains a complete schematic diagram of the monitor, along with stage identification"*

For information on this article, visit [www.monitoringtimes.com](http://www.monitoringtimes.com)



ABM1  
ABM1WT  
Passive Air Band Monitor Kit  
Passive Air Band Monitor, SMT Version, Factory Assembled & Tested

\$89.95  
\$159.95





KIT

*Get On The Air...  
For Under \$40!*

These little rigs are burning up the airwaves as young and old alike are rediscovering the fun in building their own equipment! Our detailed, step-by-step instruction manuals make building an enjoyable and rewarding experience. You're guided carefully to the completion of a unit that not only works but will provide hours of operating pleasure. These trusted and proven Ramsey all-mode mini rigs are routinely used worldwide by Hams of all ages.

You'll find you don't need high power - K71RK worked and QSL'd all states, plus global DX QSOs from Argentina to the former USSR—with only 2 mW! You don't need hundreds of watts, thousands of dollars or massive equipment; you'll find it's more fun with less!

These little receivers are based upon the SA-602 that we read about in Ham magazines and handbooks. Available in 20 meter, 30 meter, and 40 meter versions, the receivers are true superheterodyne direct conversion - a simple design that does not require the use of fancy IFs, RF filters, or exotic mixers. In short, the ideal design for easy hobby building. Only recently have high performance ICs become available that enable such circuitry to be constructed. Beginners can easily build these receivers, and experienced amateurs and QRP enthusiasts can use them as a reliable, economical, basic foundation for modifications.

Our single PC board has plenty of room for lots of modifications and hook-ups - tinker to your heart's content! Suggestions and technical info are included in every receiver manual. Isn't this what Ham radio is all about? Operates on 9 V battery (not included). Included case measures 5"W x 1 1/2"H x 5 1/4"D".

HR20C	20 Meter Receiver Kit With Case	\$44.95
HR30C	30 Meter Receiver Kit With Case	\$44.95
HR40C	40 Meter Receiver Kit With Case	\$44.95

## QRP Amateur Radio Mini-Transmitters

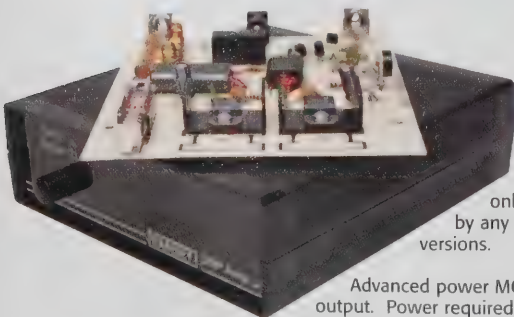
- ✓ Four transistor circuit, oscillator, RF amplifier chain, and clean keying stage
- ✓ RF output of approximately one watt (3/4 W for QRP20)
- ✓ Pi-network output for good matching and harmonic suppression
- ✓ Provision for two internal crystals (one crystal provided), front panel switching
- ✓ VCXO tuning, frequency can be tuned approximately 7 KHz around XTAL frequency
- ✓ Available in 20 meter, 30 meter, or 40 meter versions

These nifty little CW transmitters are practical and economical take-along rigs for trips, camping, teaching or just amazing yourself with what a watt will do! With an exceptional manual of over 20 pages, the detailed step-by-step instructions guide you to a perfectly operating finished transmitter. They are available in 20 meter, 30 meter, and 40 meter models.

The rigs use a standard crystal that is connected into a VCXO circuit - which means that you can tune around the crystal's frequency by up to 20 KHz - thus giving you stable crystal control while still being able to tune around! A front panel switch lets you choose between two crystals; we include one, you can add another of your choice. A built-in T-R switch allows break-in operation.

Of course, these transmitters interface perfectly with our QRP Mini-rig receivers and our CMOS CW keyer! And for the real Ham, there's plenty of room inside the included case for your own circuit modifications and experiments. These little rigs are often the heart of many QRP operator's stations. Modify "til the cows come home" or just use them as they are - these little rigs pack a lot of performance into an economical package. Runs on 12-15VDC at 200 mA. Included case measures 5"W x 1 1/2"H x 5 1/4"D".

QRP20C	20 Meter Transmitter Kit, Includes 14.060 MHz Xtal And Case	\$49.95
QRP30C	30 Meter Transmitter Kit, Includes 10.108 MHz Xtal And Case	\$49.95
QRP40C	40 Meter Transmitter Kit, Includes 7.040 MHz Xtal And Case	\$49.95
AC121	12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency	\$9.95



KIT

*Cut Through The QRM  
With 20 Watts!*

Need a little extra boost for your QRP rig? This nifty little amplifier may be all you need. Believe it or not, 20 watts is only 7db (about one S unit!) less power than a full sized commercial transceiver. These compact amplifiers are easily driven by any of our QRP transmitters or any other unit in the 1/2 - 2 watt range and are available in 20 meter, 30 meter, and 40 meter versions.

Advanced power MOSFETs are used for the utmost in efficiency and purity while a multistage low pass filter is used to assure a clean signal output. Power required is only 12-15VDC at 2 to 4 amps, depending upon power output. Complete step-by-step instructions are provided which make building the kit a breeze. The amplifier works well for all modes: CW, SSB and AM. Included case measures 5"W x 1 1/2"H x 5 1/4"D".

QAMP20C	20 Meter QRP Amplifier Kit With Case	\$44.95
QAMP30C	30 Meter QRP Amplifier Kit With Case	\$44.95
QAMP40C	40 Meter QRP Amplifier Kit With Case	\$44.95

## QRP Amateur Radio Linear Amplifiers

- ✓ Works great with Ramsey QRP rigs or any other 1-2 watt transmitter
- ✓ Built-in T/R relay automatically switches between receive and transmit
- ✓ Operates all modes; CW, SSB, or AM

### What is QRP all about?

"People like to overcome challenges; it's part of our nature. I lack the physical skills to be a mountain climber, so I have instead chosen to challenge the fickle layers of the ionosphere with a transmitter that runs milliwatts. It's my way of riding the knife-edge of what can be done."

Ed Hare, W1RFI





KIT

Wired & Tested



Track Them Down...  
Quick!

Get in on the fun of radio direction finding (RDF) with this super kit! The latest in affordable Doppler direction finding equipment available in a complete kit form...this one even includes the receiving antenna assembly!

A must for the "fox hunter" at an unheard of price! Radio direction finding is a fascinating hobby and is becoming more and more popular in today's portable world.

## Doppler Direction Finder

- ✓ Track down jammers and hidden transmitters with ease!
- ✓ Elegant and cost effective design thanks to WA2EBY!
- ✓ Featured in QST Magazine
- ✓ Convenient LED 22.5 degree bearing indicator
- ✓ Adjustable damping rate, phase inversion, scan enable/disable
- ✓ Utilizes high speed CMOS technology for signal conditioning and audio processing!



With the increasing number of intentional jammers and other unknown transmitters around, Doppler DF locators have become the rage with a display that gives you a direct bearing on the location of the transmitter. Pretty neat trick considering you don't need multiple separate receivers at different locations to triangulate on the mystery transmitter!

The kit includes the Doppler Direction Finder display unit and all the parts necessary to build your own four point, 5 piece magnetic antenna assembly for easy setup and use. Operates on 12-15VDC and includes a matching 12VDC power plug for custom integration and connection into your vehicle or portable power supply. Easy to hook up to any FM receiver. Transmitter (the object of your DF'ing) need not be FM, it can be AM/FM or CW.

Requires only a connection to your receiver's speaker jack and radio's antenna. The whips can be cut and optimized for any frequency from 85-1000 MHz. An easy to build, reliable kit that compares most favorably to commercial units costing upwards of \$1000.00! Comes complete with matching case, 12VDC plug, magnetic antenna kit with cables, and a comprehensive instruction manual. (Editors rule of thumb: always look across the street for a guy on a lawnmower before you take the picture!)

DDF1 Doppler Direction Finder Kit, With Case, Power Cable, And Magnetic Antenna Kit  
DDF1WT Factory Assembled & Tested DDF1 With Case, Power Cable, And Magnetic Antenna Kit

\$169.95  
\$269.95

## Mini VHF Series Receivers

- ✓ Tunes any 5MHz portion of selected receiver band
- ✓ Excellent performance, less than 1µV sensitivity
- ✓ True Superhet Receiver with sharp ceramic IF filters
- ✓ Front panel volume, squelch, and tuning controls

There are no short cuts taken in the design of these units, sensitivity is equal to full size monitor receivers or scanners. Schools, scout troops, clubs and hobbyists use these receivers for teaching, monitoring, and just plain building enjoyment. Any one of these little receivers is ideal for easy chair listening and with no big clunky box and wiring to aggravate the XYL!

All four receivers can be tuned outside of the intended amateur bands. For example, the FR146 two meter receiver will tune any 5 MHz segment from 130 to 180 MHz. Choose your band and enjoy FM repeater and simplex monitoring on a budget! Help a newcomer discover the 220 MHz novice band. Listen in on exciting 10 Meter international FM action. Rediscover the fascination of 6 Meter sporadic E band openings and uncrowded new FM repeaters. For a professional finished look, our matching case and knob set is included. Kit includes detailed step-by-step manual that carefully guides you to a finished working radio. Runs on a standard 9VDC battery (not included). Case measures 5"W x 1 1/2"H x 5 1/4"D.

FR146C 2 Meter Receiver Kit With Case  
FR6C 6 Meter Receiver Kit With Case  
FR10C 10 Meter Receiver Kit With Case  
FR220C 220 MHz Receiver Kit With Case

\$49.95  
\$49.95  
\$49.95  
\$49.95



KIT

Low Cost...  
Easy To Build!



KIT

Works With Any Rig!

Add to your CW fun with our low cost CMOS Keyer Kit. You'll send clean code that's a pleasure to copy; self completing dots and dashes with properly weighted spacing and timing are all programmed into the CW7C's design. Assembly of the keyer is fast, easy, and fun. Our step-by-step instructions lead you to a finished unit in only one evening. Great for beginners to learn proper and perfectly formed CW right from the start!

Built-in tone, adjustable pitch, and front panel speed and volume controls are featured. The CW7 is the ideal companion to our QRP transmitters or any other rig you may own. You need to supply an external set of paddles (Manual includes details on constructing economical paddles). The included custom case and knob set matches our QRP receivers and transmitters and gives your keyer a nice attractive finished look.

Runs on a standard 9VDC battery (not included). Case measures 5"W x 1 1/2"H x 5 1/4"D.

CW7C CW Keyer Kit With Case

\$34.95

## Code Practice Oscillator

- ✓ Great starter kit for young or old!
- ✓ Ideal scouting project
- ✓ Practice your code anywhere!

Looking for a great starter kit to spark the interest of a future engineer? Looking for an easy way to either learn or practice your code? This little code practice oscillator is inexpensive, easy to build, easy to use, and features an audio tone adjustment for your listening pleasure. The unique "key" built on the board simulates a standard CW key making it unnecessary to connect an external key. A small built-in speaker provides you a clear audible tone complete with adjustable pitch. Uses the ever popular 555 timer IC with full theory of operation to guide you through the construction. Handy 9 VDC battery operation (not included) insures hours of enjoyment and the chance to practice your CW code anywhere you go. Size: 3 1/2" X 1 1/2" X 3/4".

CPO3 Code Practice Oscillator Kit

\$17.95



Learn Code The Simple Way!

KIT







**Great Gain And  
Super Selectivity!**



## 2-Meter Receiver Preamplifier

- ✓ 2 Meter Preamp with the sharpest filtering available!
- ✓ Can be powered up the signal coax (9 to 15 VDC)
- ✓ Helical filter for fantastic intermod rejection

Here's the ideal preamp for repeaters, base stations, mobiles - anywhere a selective, low noise signal boost is needed. Unlike other preamps the PR100 features extensive RF filtering to crush intermod before it reaches your radio.

Two poles of sharp Helical filtering combined with a 3 pole L-C tank allow only signals of interest to reach your receiver. A low noise microwave bipolar transistor provides an excellent 1 dB noise figure while remaining ruggedly insensitive to static and strong signals. Preamp is easily configured to be powered via the coax (for mast mount applications) or powered through a separate power cable. Kit is designed to fit snugly into a 3" long piece of 1 1/2" PVC pipe with end caps, making an ideal outdoor enclosure. Runs on 9 to 15 VDC. Size: 4"W x 7/8"H x 1 3/8"D.

PR100

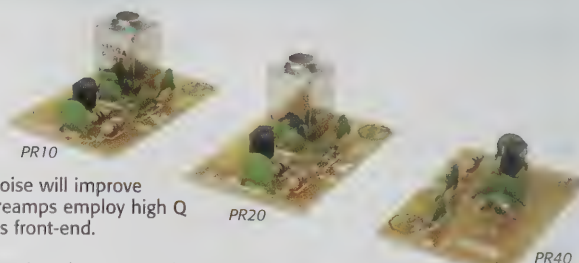
2 Meter Receiver Preamp Kit

\$21.95

## Low Cost Receiver Preamps

- ✓ Low noise (typically < 1 to 1.5 dB)
- ✓ High Q tuned circuits (very narrow band) prevent out-of-band signals from overloading front-end
- ✓ Available in 2 meter, 220 Mhz, 440 MHz

**The Quick And Easy  
Preamplifier!**



Put some new "ears" on your rig with one of these hot little preamp kits. Their high gain combined with low noise will improve most any receiver. Fully protected against overload and designed for low current and stable operation, these preamps employ high Q tuned circuits which restrict out-of-band signals which can cause intermod blanking and overload of your radio's front-end.

Don't be misled by GaAs FET claims! The cheap dual-gate FETs (manufactured for TV tuner usage!) used by others just don't come close to the performance of these preamps designed with NEC microwave transistor devices. Gain is typically 16 to 20 dB and noise figure is 1 dB @ 2 Meters, 1.2 dB @ 220 MHz, and 1.4 dB @ 440 MHz. Compact design for easy installation into most any rig. Operates on 12 to 15 VDC. Size: 1" x 3/8" x 1 1/2".

PR10

2 Meter Receiver Preamp Kit

\$9.95

PR20

220 MHz Preamp Kit

\$9.95

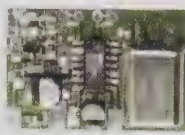
PR40

440 MHz Preamp Kit

\$9.95



RX Data Transmitter



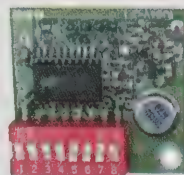
RX Data Receiver



RXD Receiver/Decoder



TXE Transmitter/Encoder

RXDA  
Receiver/DecoderTXEA  
Transmitter/Encoder

Wired &amp; Tested

**Let These Modules Do All The  
Work In YOUR Next Project!**



## RF Wireless Link Modules

- ✓ The EASY way to send and receive data!
- ✓ 433MHz and 916 MHz units available!
- ✓ Transmitters, receivers, encoders, decoders
- ✓ Factory assembled & tested SMT design

Now you can build those special remote control projects in a flash and have the ultimate in reliability... and security! Unlike other units on the market, these units are crystal controlled for no frequency drift, yet are ultra small and very low power. The decoder output provides +5VDC or 0 (1 or zero) switch output that is CMOS compatible. Encoder data enable input also accepts the same standard CMOS compatible input.

To give these little boards even more versatility, they can be easily interfaced to the outside world by using other Ramsey kits. Simple switches can be used on the inputs of the TX and TXE modules to control one (RX) or up to four output circuits (RXD) connected to the receiver modules. The BE164 can be used with the TXE modules along with the BD416 on the RXD modules to control any 1 of 16 output circuits. The R11 can be added to the output of the RX, RXD, or BD416 to provide a switch relay to control devices like house lighting, motors, or other high voltage or current devices.

These wireless RF link boards are perfect for any wireless application - sending data, car alarms, door openers, home security, electronic monitoring... you name it! You can also monitor a test point or an alarm point on a circuit and have it alert you remotely. The applications are endless! Thousands of these have been provided to manufacturers for their OEM use! You may already have one of these and not know it!

The basic TX/RX models transmit one bit of insecure information. Great for when you only need to turn one device on or off. Easy to connect, just solder your inputs and outputs to the provided pads.

The encoder/decoder models allow you to program each unit so that they only respond to your set address code, 256 different addresses possible. These units have four separate data lines for either sending four bit data or controlling four separate devices. No processor or computing required! The TXE/RXD use the same simple input and output solder connections as the TX/RX units, for the addressing simply solder desired address pads to ground. The A-Series modules include a programmable dip switch for encoder/decoder address settings and common dual row pin-outs for easy integration into your equipment!

Two versions are available - 433 MHz and 916 MHz. 916 units can use shorter antennas (3 inches) and are better in high RF environments while the 433 units have better range but need larger antennas (7 inches). All units will operate on 5 volts DC. Depending on model other voltages are available. Worst case 20mA operating current, stand-by current in the low micro amps.

Dimensions of each board are as follows:

RXD433A	1.28" x 1.6"	TX433	.57" x .75"
TXE433A	1.28" x 1.3"	RXD916	1.16" x 1.7"
RXD433	1.42" x 1.26"	TXE916	.75" x 1.325"
TXE433	.75" x 1.325"	RX916	1.04" x 1.15"
RX433	.85" x 1.26"	TX916	.57" x .75"

Because these are subminiature SMT designed circuits and boards, they are factory assembled and tested at Ramsey! Not a kit, these are immediately ready to use or integrate with your project! (NO, these do NOT send audio or video, they send data, you know, those handy little ones and zeros!!! There, saved you the email!)

RXD433A	433 MHz Receiver/Decoder Module w/Dip Switch	\$39.95
TXE433A	433 MHz Transmitter/Encoder Module w/Dip Switch	\$37.95
RXD433	433 MHz Receiver/Decoder Module, Assembled	\$34.95
TXE433	433 MHz Transmitter/Encoder Module, Assembled	\$32.95
RX433	433 MHz Data Receiver Module, Assembled	\$29.95
TX433	433 MHz Data Transmitter Module, Assembled	\$24.95
RXD916	916 MHz Receiver/Decoder Module, Assembled	\$34.95
TXE916	916 MHz Transmitter/Encoder Module, Assembled	\$32.95
RX916	916 MHz Data Receiver Module, Assembled	\$29.95
TX916	916 MHz Data Transmitter Module, Assembled	\$24.95

**Make it easy!**  
Use our BE164 and  
BD416 boards on  
page 36 to interface  
with these RF  
Modules!

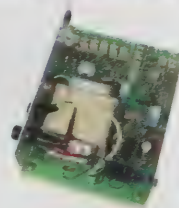




## Vintage Radio Battery Eliminator Power Supply

- ✓ Powers virtually all antique battery-powered radios
- ✓ Easy connections to your equipment!
- ✓ Runs on either 120VAC at 60Hz or 240VAC at 50Hz

**Bring Your Classic  
Battery-Powered Radios  
Back From the Dead!**



Collectors often come across great deals on antique battery-powered radios, but then find themselves faced with the challenge of how to power them. Many classic radios operated on batteries only, and in many cases a series of three batteries for each radio were required!

Quick lesson time for the young readers out there... The A battery provided power to the filament of a vacuum tube, the B battery provided the plate voltage for the tube, and the C battery provided bias to the control grid of the tube. But then again, if it's lesson time, we'll have to explain what a tube is, what the plate is, and what the control grid does! The new ABCE1 Battery Eliminator gives you an easy way to replace all these batteries with a simple household AC power connection. For our International friends, we even designed it with a tapped primary so you could run it on either 110VAC or 220VAC with a simply jumper selector!

- "A" Filament Supply:  
"B" Plate Supply:  
"C" Bias Supply:

### SPECIFICATIONS

Adjustable from 1.25VDC to 6.5VDC @ 2.5A max \*  
22VDC, 45VDC, 67VDC, 90VDC, 135VDC fixed outputs  
@ maximum of 60ma total for all loads.  
-3VDC, -4.5VDC, -9VDC, -22VDC fixed outputs  
@ maximum of 20ma total for all loads.

\* The "A" filament supply + voltage is bonded to the AC input line equipment ground.

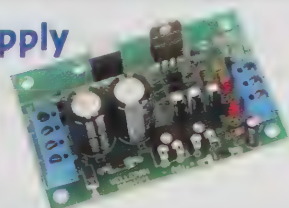
Just plug it in, hook it up, and resurrect your vintage antique radios! The ABCE1 provides the required operating voltages, and all supplies are isolated from each other and input line voltage for the ultimate in safety as well as compatibility and easy interconnection for virtually any required configuration you may have. All output voltages are connected using convenient screw terminals on the board, making hooking up your equipment a snap! For added protection, the input line is fused for 1A with an externally accessible fuse. The ABCE1 is housed in a sturdy, fully enclosed and vented, 3"x5"x7", aluminum case and weighs only 2.75lbs. (Before you ask, you wouldn't believe what just the custom transformer costs us!)

ABCE1 Vintage Radio Battery Eliminator Kit

\$179.95

## Symmetric 1A Power Supply

- ✓ Plus & minus 1.2V to 24VDC!
- ✓ Thermal protection
- ✓ Just add a transformer & heatsink



**Low Cost, Easy to Build!**

The K8042 is a great little symmetric power supply designed to provide  $\pm 1.2$  to 24VDC regulated at 1A. Perfect for amplifiers, op-amps, and other applications requiring a nice-regulated  $\pm$ DC source. The circuit provides short circuit and thermal protection.

Just provide a suitable power transformer or AC source (up to 24V) and heatsink and you're all set. Features LED status indicators. Board measures 3.1" x 2" x .9" From Velleman.

K8042 Symmetric 1A PS Kit

**KIT**

\$15.95

## Regulated 1A Power Supply

- ✓ 1.5 to 35VDC at one amp!
- ✓ LM317 regulator circuit
- ✓ Current and thermal overload protection



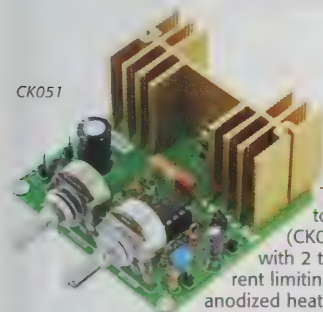
**1 Amp Up To 35 Volts!**

If you're looking for a small power supply regulator and don't want to build it up from scratch, the K1823 is just for you! Designed around the LM317 regulator, it will provide a variable regulated output between 1.5 and 35VDC. Continuous output current is conservatively rated at 1A with a maximum output current of 1.5A. Maximum input voltage is 40VDC for rated output. Both current and thermal overload protection is provided by the LM317. Heatsink is not included and is required for maximum rated output. Board measures 2.1" x 2.1". From Velleman.

K1823 1A Power Supply Board Kit

**KIT**

\$12.95



**KIT** **Wired & Tested**

**Rock Solid Power for  
Your Custom Projects!**

These small power supplies provide a regulated DC voltage adjustable from 0 to 18V with the maximum current adjustable from 0 to 1A (CK051) or 0 to 2A (CK052). Both use the popular LM723 regulator Integrated Circuit in conjunction with 2 transistors to provide a well regulated DC output with the added features of current limiting and overload protection. They both feature oversized board mounted gold anodized heat sinks. From CanaKit.

Adjustable Regulated Power Supply 0-18V / 0-1A Kit

Adjustable Regulated Power Supply 0-18V / 0-1A, Factory Assembled & Tested

Adjustable Regulated Power Supply 0-18V / 0-2A Kit

Adjustable Regulated Power Supply 0-18V / 0-2A, Factory Assembled & Tested

CK051  
UK051  
CK052  
UK052

\$24.95  
\$32.95  
\$30.95  
\$35.95

## 0-18VDC Regulated Power Supplies

- ✓ Well regulated adjustable DC output, 0-18VDC
- ✓ Current limit and overload protection
- ✓ Large PC board mounted heat sink
- ✓ Board mounted potentiometers for easy panel mounting

### SPECIFICATIONS

Supply Voltage: 14-16VAC / 1A (CK051) or 2A (CK052)  
Output Voltage: Adjustable from 0-18VDC  
Output Current: Adjustable from 0-1A (CK051) or 0-2A (CK052)  
Regulation: < 0.05%  
Ripple: < 5mVp-p  
Dimensions: 3.50" x 2.40"

## 0-30VDC Regulated Power Supplies

- ✓ Includes overload indicator and overload protection!
- ✓ Built-in current limiter and oversized heat sink!
- ✓ Adjustable from 0-30VDC / 0-1.5A or 0-2.5A

**KIT** **Wired & Tested**

**Instant Protection From Over-Current!**

These high quality power supplies feature continuously variable regulated output voltages adjustable from 0 and 30V DC. Based on three Op-Amps, they incorporate an electronic output current limiter that limits the output current from 0 to a maximum of 1.5A or 2.5A depending on the model. This makes them ideal bench and lab supplies, since you can limit the current to the typical maximum for circuits under test, protecting them from any damage that might be caused under excessive load! The supplies also feature an overload indicator LED, to alert the operator immediately if the circuit is exceeding the preset limit. These power supplies are a great time saver during experimental work! From CanaKit.



**SPECIFICATIONS**  
Supply Voltage: 24VAC / 1.5A Transformer  
Output Voltage: Adjustable from 0-30VDC  
Output Current: Adjustable from 0-1.5A or 0-2.5A (CK239)  
Regulation: < 0.05%  
Ripple: < 5mVp-p  
Dimensions: 3.80" x 2.50" (CK182) 5.75" x 2.63" (CK239)

CK182 Adjustable Regulated Power Supply 0-30V / 0-1.5A Kit

Adjustable Regulated Power Supply 0-30V / 0-1.5A, Factory Assembled & Tested

Adjustable Regulated Power Supply 0-30V / 0-2.5A Kit

Adjustable Regulated Power Supply 0-30V / 0-2.5A, Factory Assembled & Tested

CK182  
UK182  
CK239  
UK239

\$35.95  
\$45.95  
\$45.95  
\$56.95





KIT

Wired &amp; Tested

**Remove The Noise Automatically!**

This antenna responds only to the magnetic field of the desired station and ignores the electrostatic field where most interference is found. It does a remarkable job pulling in stations lost down in the noise of power line crud, fluorescent lamp buzz, and light dimmer hash. Plus, it's very directional, able to null strong stations on the same or nearby frequencies! Being in Rochester NY, we developed this antenna to pull in the Buffalo AM station more than 75 miles away, so we could listen to Buffalo Bills talk radio during the night. You can imagine all the power line and equipment noise we have here at the factory. So, we came up with this ferrite rod, varactor tuned active antenna that's Faraday shielded - it only responds to the magnetic field - and boy does it do the job!

Enough of why the SM100 was developed. Now for the specs! The SM100 is designed to cover the AM broadcast band but includes details on building for any frequency range up to 15 MHz (works gang-busters on Shortwave)! The antenna portion works indoors or out and is contained in rugged PVC pipe with a single F-type coax cable connector. Operates with up to 500 feet of coax cable (not provided!) between antenna assembly and control box. This compact antenna has remained a favorite with low frequency receiver enthusiasts, and works equally as well as the long wire antenna alternatives at a fraction of the cost and with a whole lot less hassle!

And it really helps out your HD AM radio from constantly unlocking from that overlapping 20kHz channel and falling back to the analog mode (something that really annoys me!) So, we discussed the Buffalo Bills stellar performance in 1990 to HD AM Radio in 2012... I guess you could say the SM100 is extremely popular, we've been around for quite a while, and apparently I'm getting old! Includes all parts, matching case set and precut PVC materials. Operates on an external 120 VAC power adapter that is included. Antenna is 9 1/2" x 9" long, L-Shaped 1" PVC pipe with end caps. Control box case measures 5"W x 1 1/2"H x 5 1/4"D. (It worked just great to listen to the Bills players explain for 4 straight years why they lost the Super Bowl and why you know who couldn't kick a 47 yard field goal!)

SM100 Signal Magnet Noise Reduction Antenna Kit With Case  
SM100WT Factory Assembled & Tested for AM Band

\$89.95  
\$134.95

## Active Receive Antenna

- ✓ Works with HF or VHF/UHF
- ✓ Performs like a 60' Long Wire!
- ✓ Operates as a stand-alone antenna or in conjunction with an existing antenna
- ✓ Next generation of the proven AA7C!

**The Easy Antenna...  
Regardless Of Frequency!**

Our AA7C had been a favorite for the serious DX'ers, and now it's even better! It works on all bands - shortwave, HF, VHF and UHF! Imagine a self-contained unit just 4 inches square that pulls in the signals like a 60 foot long wire; that's the advantage of an active antenna! For jazzing up VHF/UHF receivers and scanners the AA7B has you covered too. Over 15 dB of gain pulls in the weak ones whether you use the included telescopic whip or an outside antenna.

Unlike it's predecessor, the AA7B requires no band switching to cover the range of 1MHz to 800MHz. That's right, it has a bandwidth of 800MHz with up to 20 dB of gain at an input signal level up to -20dBm. A pair of N-Channel MOSFET tetrode transistors provide the gain. Because they are tetrode MOSFET devices, the gain adjustment is accomplished using a variable DC control voltage so the gain control potentiometer won't cause any noise if it gets "dirty". The transistors and solid state relays are surface mount devices, so the signal path (and therefore a lot of potential signal loss!) is minimized.

What if you don't need any gain? No problem! Just turn the AA7B off and the solid state relays automatically route the signal directly through with no amplification and a very minimum, 1dbm or less, of signal loss. There are no mechanical switches in the signal path to get dirty and degrade the signal levels. High quality BNC connectors provide input and output connections to your antenna and receiver.

You can power the AA7B from a standard 9 volt battery for portable operation or plug in an external power supply between 7 and 15 VDC. The battery will be automatically disconnected when you use an external power source. There's even an LED indicator to show you the AA7B is turned on and ready to go.

Features of the AA7B include: Front panel RF gain control, power switch with preamp bypass switching, rear panel input and output connectors, convenient 9 volt battery operation and telescopic whip antenna (or connect your own antenna with the BNC connector). We think you'll agree that the AA7B is simply the most practical and best value of any active antenna on the market! Includes whip antenna and matching case set. Operates on a standard 9VDC battery (not included). Case size 5"W x 1 1/2"H x 5 1/4"D. (My parents would have appreciated this when I was a kid, rather than drilling holes through the wall to get the long wire for my Star Roamer out of my bedroom, and across the yard to a tree!)

AA7B Active Antenna Kit With Case

\$59.95

## RF Preamplifier

- ✓ Broadband from 100 KHz to 1000 MHz!
- ✓ High Gain: 16 db
- ✓ Low noise, less than 4dB!

**We're Talking Broadband!**

This is the famous preamp that's been written up in all the radio and electronics magazines. New low-cost microwave transistors make it possible to give performance unheard of a few years ago!

Provides 16dB gain from 100kHz to 1GHz and is unconditionally stable! Runs on 12-15VDC at 15mA. Input and output impedance is 50-75 ohm. Measures 1" x 3/8" x 1 1/2".

SA7 RF Preamp Kit

KIT

\$16.95

## AM/FM RF Preamplifier

- ✓ 10MHz to 150MHz!
- ✓ Shielded metal housing
- ✓ Direct or line fed DC supply

**Amplify Those Signals!**

Designed specifically for AM/FM radio reception, the K2622 provides 22dB gain between 10MHz and 150MHz. The sleek metal housing provides the necessary shielding and assures you of the least amount of interference.

Input power is 12-15VDC at 2mA and can be powered directly or up the coax. Input/output impedance is 50-75 ohm. Measures 3.4" x 1.4" x .9". From Velleman.

K2622 AM/FM Preamp Kit

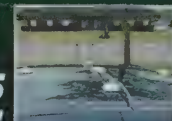
KIT

\$18.95

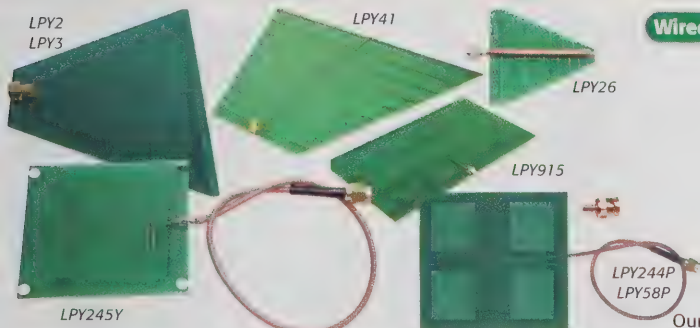
## DOPPLER DIRECTION FINDER... Find That Transmitter Quick!

Track down jammers and hidden transmitters with a built-in compass heading display!

from \$169.95  
See Page 51







Wired & Tested



Broadband  
Coverage And  
NO TUNING!

## Precision PC Plane Antennas

- ✓ Small thin size with excellent performance
- ✓ Very directional—ideal for transmission or reception use
- ✓ No tuning needed!
- ✓ Rugged FR-4 construction
- ✓ Available log periodic, yagi, Vivaldi, or quad-patch!

Our series of PC Plane antennas have been a customer favorite for years, and with new models being added as technology changes, they continue to be the favorite for virtually all RF and wireless applications. They are engineered, designed, and available in log periodic, yagi, Vivaldi, or quad patch versions over various broad frequency bands. Their maintenance-free construction on rugged FR-4 material boasts the added advantages of no tuning and no fragile antenna elements to break or twist!

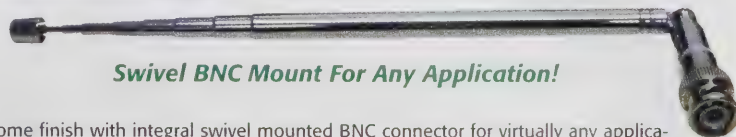
Their directional properties provide extremely high gain over their omnidirectional counterparts. Whether it be HD TV reception, microwave link reception, wireless LAN reception, ATV and data transmission, RFID detection, or RF test and measurement, these antennas are your perfect solution! If you are looking for a dedicated point-to-point link antenna system, they have no equal!

Each PC Plane antenna is provided with a suitable RF connection as described below, making it ready to connect to your equipment. Pick the one that's right for your application and start enjoying the fruits of a well-designed RF antenna system!

LPY41	Logi Log Periodic PCB Antenna, 400-1,000 MHz, 6 dBi Gain, SMA Female, Factory Assembled & Tested	\$49.95
LPY2	Logi Log Periodic PCB Antenna, 900-2,600 MHz, 6 dBi Gain, SMA Female, Factory Assembled & Tested	\$34.95
LPY3	Logi Log Periodic PCB Antenna, 850-6,500 MHz, 6 dBi Gain, SMA Female, Factory Assembled & Tested	\$37.95
LPY1250Y	Directional Yagi PCB Antenna, 1,250-1,300 MHz, 6-7 dBi Gain, SMA Male, Assembled & Tested	\$39.95
LPY26	Logi Log Periodic PCB Antenna, 2.1-11.0 GHz, 6 dBi Gain, SMA Male, Factory Assembled & Tested	\$29.95
LPY915	Directional Yagi PCB Antenna, 900-930 MHz, 6 dBi Gain, BNC Male, Factory Assembled & Tested	\$29.95
LPY245Y	Directional Yagi PCB Antenna, 2.4-2.48 GHz, 8.5 dBi Gain, SMA Male, Assembled & Tested	\$37.95
LPY518V	PCB Vivaldi PCB Antenna, 5-18 GHz, 6-8 dBi Gain, SMA Male, Assembled & Tested	\$37.95
LPY244P	PCB Quad Patch PCB Antenna, 2.4-2.48 GHz, 12 dBi Gain, SMA Male, Assembled & Tested	\$37.95
LPY58P	PCB Quad Patch PCB Antenna, 5.8 GHz, 10 dBi Gain, SMA Male, Assembled & Tested	\$37.95

## Telescopic Whip Antenna

- ✓ High quality with BNC connection
- ✓ Covers VHF and UHF bands



Swivel BNC Mount For Any Application!

Ideal for handheld portables, receivers, and communications test equipment. Professional chrome finish with integral swivel mounted BNC connector for virtually any application! From the top of equipment to 90 degrees on the back of equipment, it will work like a champ! Whip extends 5.25" to 27.75" to cover a wide variety of ranges with ease!

WA10

Telescopic Whip Antenna

\$14.95



## Tru-Match FM Broadcast Antenna

Rugged PVC Construction...  
Keeps The Weather Out!

- ✓ Fully weatherproof - rugged PVC construction
- ✓ Matches 50 or 75 ohm systems!
- ✓ Broadband for perfect match!

Looking for a perfect low cost FM antenna? Our extremely popular TM100 Tru-Mach antenna will fit the bill! Matching your antenna to your transmitter is the single most important link in your transmitter setup. Without a proper match, power is reflected away from the antenna and back into the transmitter! This can cause the final amplifier stage to be damaged, not to mention spurious signals and (no better way to say it!) lousy range.

The unique design features PVC tubes and fittings to make it waterproof and impervious to rain and snow, which make the TM100 one of the most reliable antennas available for the private broadcaster! Unlike other FM transmitter antennas that need to be tuned to a specific frequency, the TM100 is broadband over the entire 88-108MHz band yet still maintains an excellent match! The antenna terminates with a standard "F" connector for easy connection with standard 75 ohm TV coax to your FM10C or FM25B. See our connectors section to adapt the "F" connector to a "BNC" for easy matching of professional 50 ohm coax or 75 ohm TV coax for use with our FM30B or FM100B series transmitters. Maximum power rating of the TM100 is 25 watts. BTW, also makes a GREAT and easy-to-connect omnidirectional receiver antenna!

TM100

FM Broadcast Low Power Antenna Kit (25W Max)

\$69.95

## 5/8 Wave Collinear Vertical FM Antenna



- ✓ 5/8 wave for excellent gain and maximum range
- ✓ Field adjustable for a perfect match
- ✓ 3.4 dB gain effectively doubles your power!

New Version For Even Greater  
Performance!

The FMA200 antenna has been our most popular FM broadcast antenna... now it's even better, with the new revised model! The proven omnidirectional ground plane 5/8 wave design keeps your signal low to the horizon and not uselessly radiating up into space - great if your listeners are out in space but the pits for the folks out at the edge of town! Imagine a donut shaped pattern of signal radiating from your antenna. For the most range out to the horizon, we need to "squish" that pattern flatter to squeeze more signal out - and that's exactly what this antenna does! And now the FMA200E has increased power handling capacity to 300 watts, and includes a complete tool kit to make installation a breeze!

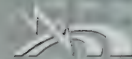
The antenna is easy to assemble and is adjustable to your specific frequency during assembly. Makes a super match and a perfect VSWR to your transmitter! The base of the antenna mounts on any standard antenna mast or pipe (not included). A professional SO-239 connector is provided at the base of the antenna to match a standard PL-259 connector. Height: 7' 7", 300 watt power rating. Visit [www.ramseyelectronics.com](http://www.ramseyelectronics.com) for matching coax cable assemblies to match up to your transmitter.

FMA200E

5/8 Wave Collinear Antenna, 300 Watt RF Power Rating

\$139.95



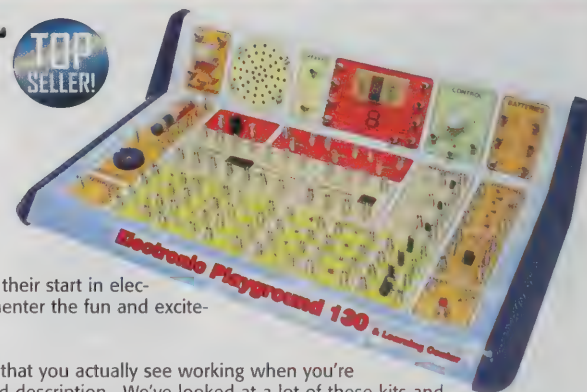


## Easy To Learn 130 In 1 Electronics Lab

- ✓ No prior knowledge of electronics needed!
- ✓ Solderless connections for safe assembly
- ✓ Build 130 different circuits and see them work!
- ✓ Includes a comprehensive instruction & theory manual written for the youngest novice to understand!

**KIT**

**TOP  
SELLER!**



### A Great Start To Electronics... With 130 Separate Projects!

For over three decades, Ramsey has provided educational hobby kits that give thousands and thousands of kids their start in electronics. We've searched and searched for an Electronics Lab specifically designed to teach the youngest experimenter the fun and excitement of electronics.

The PL130A does just that! Learn the basics and theory of electronics the fun way while building 130+ projects that you actually see working when you're done! The detailed instruction manual covers the hows and whys of every circuit, theory, parts identification, and description. We've looked at a lot of these kits and have turned them down because of the documentation. This one is a winner!

### LOTS OF PROJECTS? YOU BET! Check them out!

Electronic Woodpecker  
The Chirping Bird  
Electronic Cat  
Sonic Fish Caller  
Machine Gun Pulse Oscillator  
Electronic Motorcycle  
Two-Tone Patrol Car Siren  
Electronic Siren  
Electronic Metronome  
Electronic Grandfather Clock  
Light-Controlled Electronic Harp  
Horror Movie Sound Effects  
Strobe Light  
Rapid LED Display Switching (Persistence Vision Test)  
Capacitor Discharge/High Voltage Generator  
Capacitors in Series and Parallel  
Resistors in Series and Parallel  
Light Dimmer  
Transistor Switcher  
Transistor Circuit Action  
Sound Amplifier  
Flip-Flop Multivibrator with LED Display  
Seven-Segment LED Digital Display Circuit  
Basic LED Display  
Transistor Control Switching of the LED Display  
Transistor, CDS Cell and LED Display Circuit  
Diode-Transistor Logic AND with LED Display  
DTL OR Circuit with LED Display  
DTL NAND Circuit with LED Display  
DTL Exclusive OR Circuit  
Transistor NOR Circuit with LED Display  
Transistor Flip-Flop Circuit  
Transistor Toggle Flip-Flop  
Transistor-Transistor Logic Buffer Gate  
TTL Inverter Gate  
TTL AND Gate  
TTL OR Gate  
TTL Exclusive OR Gate  
TTL NOR Gate  
TTL Three-Input AND Gate  
TTL AND Enable Circuit  
TTL OR Enable Circuit  
TTL NAND Enable Circuit  
TTL R-S Flip-Flop

Toggle Flip-Flop Circuit Made from NAND Gate  
TTL Line Selector  
TTL Data Selector  
TTL Astable Multivibrator  
TTL Tone Generator  
Winking LEDs  
A One-Shot TTL  
Transistor Timer with TTL  
Buzzin' LED  
Son of Buzzin' LED  
Set/Reset Buzzer 1  
Set/Reset Buzzer 2  
Sound Machine  
Big Mouth  
Shot in the Dark  
Variable R-C Oscillator  
Oscillator with Turn-Off Delay  
Temperature-Sensitive Audio Oscillator  
Two-Transistor, Directly Connected Oscillator  
Push/Pull Square Wave Oscillator  
Pencil Lead Organ  
LED Strobe Light  
Electronic Organ  
Daylight Early Bird  
Intermittent Alarm Generator  
Comparator  
Basic Increase in DC Voltage  
Constant-Current Source  
Integrating Circuit  
Schmitt Trigger Circuit  
Noninverting Two-Power Supply Amplifier  
Inverting Two-Power Supply Amplifier  
Noninverting Single-Power Supply Amplifier  
Two-Power Supply Differential Amplifier  
Tone Mixing Amplifier  
Power Amplifier Using Operational Amplifier  
Voltage Controlled Oscillator Circuit  
Operational Amplifier Buzzer  
Burglar Alarm  
Hand-Operated Sweep Oscillator  
Falling Bomb Sound  
Emergency Siren  
First Aid Siren

Musical Tempo Generator  
Operational Amplifier Winking LED  
LED Flashing Light  
Two-LED Winker  
One Shot Light  
LED Initials  
Wake Up Siren  
Voice-Activated LED  
Logic Tester  
Alternating Current Sound  
Light Control Sound Circuit  
Sound Alarm Circuit  
Study Timer  
Kitchen Timer  
Three-Input AND Gate Using Operational Amplifier  
Voice Level Meter  
Power-On Reset Circuit  
Delayed Timer  
Pulse Frequency Doubler  
White Noise Generator  
DC-DC Converter with Operational Amplifier  
Code Practice Oscillator with Tone Control  
Crystal Set Radio (Simple-Diode Radio)  
Two-Transistor Radio  
Wireless Code Transmitter  
AM Radio Station  
Operational Amplifier Radio  
Aural Continuity Tester  
Conductivity Tester  
Transistor Checker  
Sinewave Audio Oscillator  
Low Distortion Sinewave Oscillator  
Twin-T Audio Oscillator  
Pulse Oscillator Tone Generator  
Audio Signal Tracer  
Radio Frequency Signal Tracer  
Square Wave Audio Oscillator  
Sawtooth Wave Oscillator  
Rain Detector  
Water Level Buzzer with Operational Amplifier  
Metal Detector  
Water Level Alarm  
Three-Step Water Level Indicator

Start today and learn the exciting world of electronics with this excellent starter learning lab. Just imagine, build an electronic metronome, a light dimmer, a voice actuated LED light! Or go back in time and learn all about how radio started by building yourself a Crystal Set radio... or take it one step forward and build an actual radio station!

For more advanced Electronics Labs, check out the following:

- PL200 200 In One Electronics Lab
- PL300 300 In One Electronics Lab
- PL500 500 In One Electronics Lab

This 130A In One Lab is a perfect start to a great new hobby in electronics, whether it's for you, your kids, or your friends. The 130 electronics projects are sure to excite the "student" young or old. And if it is even your first experience with electronics, the comprehensive training manual will guide you through each project, and explain exactly how and why it works! If you have a budding electronics hobbyist in your family, the 130-In-One lab is the perfect starter!





**KIT**

**200 Exciting  
Projects In A Super  
Fun-To-Use Package!**

**Super-Fun 200 In 1 Electronics Lab**

- ✓ Build 200 very special and super-fun projects!
- ✓ Front panel speaker, meter, controls, and more!
- ✓ No tools required!
- ✓ Comprehensive instruction & theory manual!

It's back and even better! The new 200-in-1 learning lab contains 200 fun and exciting projects to spark the interest of anyone wanting to explore electronics... young or old!

The exclusive front panel contains a built-in speaker, earphone, meter, 7-segment LED digital display, two controls and more to make the finished projects fun to use. Now you can build your own AM broadcast station, burglar alarm, telegraph, sound effects, radios, and other interesting circuits that give you hands-on fun when done!

The unique front operating panel and special projects make this the popular choice for entry level learning labs. Requires 6 standard AA batteries, not included.

**Includes the following super-fun learning projects:**

**Surprise and Game Projects**

Wheel of Fortune  
The Noisy Light  
Electronic Candle  
Rain Detector  
Ear splitter  
Pencil Lead Organ  
The Electric Human  
The Electrosonic Human  
Electric Birthday Cake  
Quick Draw  
Quick Draw II  
Electronic Safecracking  
UFO Invasion  
Tug of War  
Shot in the Dark  
Burglar Alarm  
SOS Alert  
Target Range  
"Catch" the Eight  
Marching LEDs  
Turn Signal Flasher  
Leapin' LEDs!  
Lights Out

**Back to the Basics**

Light Telegraph  
Frontier Telegraph  
Introducing the Resistor  
Parallel Resistors  
Secret Resistance  
A Variable Resistor  
Capacitors in Series and Parallel  
The Electronic Gas Tank  
Discharge Timer  
Light Dimmer  
The Quick Capacitor  
Electronic Timer  
Capacitors and Oscillators  
A Variable Capacitor  
Resistors and Capacitors Together  
Resistors and Capacitors Together II  
Meet the Diode  
Voltage Drop  
Voltage Regulator  
LED - A Special Diode  
How a Transformer Works  
A Chopper Circuit  
An AC Simulator  
Electronic Buzzer  
Photometer  
Electronic Jigsaw Puzzle  
Night Light  
The Light Switch  
Electronic Elephant  
Capital Letter Displays

Small Letter Displays  
Numeric Displays  
Meet the Transistor  
Transistors as Switches  
Electricity from Sound  
Electric Money

**Electronic "Building Blocks"**

A Push-Pull Amplifier  
Understanding Oscillators  
A Push-Pull Oscillator  
An Inverter Circuit  
Meet the OR Circuit  
Introducing the AND Gate  
Using the NOR Gate  
Meet the NAND Gate  
How a Multivibrator Works  
A "One-Shot" Multivibrator  
An R-S Flip-Flop

**Putting Electronics to Work**

Sound Scooper  
Liquid Conductivity Tester  
Super-Sensitive Photometer  
Motion Detector  
Two-Tone Buzzer  
Variable Capacitor Oscillator  
Variable RC Oscillator  
Electronic Metronome  
Door Alarm  
Frequency Shift Oscillator  
Code Practice Unit  
Light/Sound Code Practice Unit  
Strobe Light  
Noisy Strobe Light  
CdS-Controlled Oscillator  
Shot in the Dark II  
Does Money Talk?

**Radio Circuits**

"Crystal Set" Radio  
"Funny" Transistor Radio  
One Transistor Radio  
Spark Gap Transmitter  
Morse Code Transmitter  
Remote Water Level Detector  
AM Broadcaster

**Sonic Zoo and Sound Factory**

Basic Audio Oscillator  
Light-Controlled Bird  
Electronic Motorcycle  
Chirping Bird  
Electronic Siren  
Fish Caller  
Plant Growth Stimulator

Electronic Organ  
Electronic Raindrops  
Electronic Cat  
Electronic Bird  
Digital Rhythm  
Sound Machine I  
Sound Machine II  
Sound Machine III

**Electronic Decision-Makers**

Electronic Coin Toss  
Electronic Coin Toss II  
Even or Odd  
Electronic Roulette  
Electronic Dice  
Roulette with Sound  
The Light Fantastic  
ESP Tester  
Close-In

**A Trip to Digital Land**

Three-Input OR Circuit  
Three-Input AND Circuit  
RTL Inverter  
RTL Buffer  
RTL OR Gate  
RTL AND Gate  
RTL OR Gate  
DTL AND Gate  
DTL NOR Gate  
DTL NAND Gate  
DTL Exclusive OR Gate  
TTL Inverter  
TTL Buffer  
TTL OR Gate  
TTL AND Gate  
TTL 3-Input AND Gate  
TTL NOR Gate

**More Adventures in Digital Land**

TTL XOR Gate  
TTL NAND Enable Circuit  
TTL AND Enable Circuit  
TTL OR Enable Circuit  
TTL Line Selector  
TTL Data Selector  
TTL R-S Flip-Flop  
TTL R-S Flip-Flop II  
Transistorized Toggle Flip-Flop  
NAND Toggle Flip-Flop  
J-K Toggle Flip-Flop  
TTL Astable Multivibrator  
TTL J-K Flip-Flop  
TTL D Flip-Flop  
TTL Latch Circuit  
Shift Register

**Circuits That Count**

Basic Counter Circuit  
Synchronous Counter  
Asynchronous Counter  
Counter with Line Decoder  
Divide by 4 Counter  
Divide by 4 Counter with Line Decoder  
How a Line Decoder Works  
Multiple Counter  
Binary Counter with Display  
Divide by 3 Counter with Display  
Divide by 4 Counter with Display

**Some Silly Circuits**

Light or Sound  
Be Your Own Multivibrator  
Anticipation  
Big Mouth!  
Sound Stop  
Multivibrator Switching  
Winking LEDs  
A Phony Counter?  
Alphabet Flasher  
A One-Shot TTL  
Winking LEDs II  
Transistor Timer  
TTL Tone Generator  
Meet the VCO  
Sound Out Timer  
Buzzin' LED  
Son of Buzzin' LED  
Octave Generator  
Crossing Signal  
Digital Timer  
Set / Reset Buzzer I  
Set / Reset Buzzer II  
Set / Reset Buzzer III  
Optical Counter  
LED Sound Meter  
Shot in the Dark III  
Set / Reset Match  
Number Displays

**Testing and Measuring Circuits**

Circuit Continuity Checker  
Acoustic Ohmmeter  
DC Voltmeter  
Voltage Level Detector  
AC Voltmeter  
Audio Signal Generator  
Volume Level Meter  
Capacitance Checker  
Diode Tester  
Transistor Checker

For more advanced Electronics Labs, check out the following:

- PL300 300 In One Electronics Lab
- PL500 500 In One Electronics Lab





### 300 Projects Plus Theory!

## Complete 300 In 1 Electronics Lab

- ✓ Build 300 exciting electronic projects
- ✓ Solderless connections for safe assembly
- ✓ No tools required!
- ✓ 165 page comprehensive instruction & theory manual!

After we introduced our PL130 lab kit we were amazed at the customer response. Hundreds and hundreds were ordered, and re-ordered by everyone you could imagine! From parents for their kids, to grandparents for THEIR kids and grandkids, the response has been the same... "THEY LOVE IT!"

We've expanded our line to include this 300-in-one lab kit! Just like the PL130, this lab includes an incredible 165 page comprehensive manual covering the construction of EACH project and the theory behind it.

**Includes ALL of the projects in the PL130A PLUS THE FOLLOWING PROJECTS:**

#### Surprise and Fun

Light-Controlled Bird  
A Transistor Radio  
Sound Scooper  
American Patrol Car Siren  
Digital Roulette  
IC Organ

#### Back to the Basics

Light Telegraph  
Introducing the Resistor  
Parallel Resistor  
Meet the Diode  
The LED-a Special Diode  
The Electronic Gas Tank  
Meet the Transistor  
Transistor as switches  
PNP Transistor Switch  
NPN Transistor Switch  
Delay Light  
Night Light  
Electronic Timer  
Capital Letter Display  
Small Letter Display  
Number Display

#### Electronic "Building Blocks"

An Inverter Circuit  
Meet the OR Gate  
Introducing the AND Gate  
Using the NOR Gate  
Meet the NAND Gate  
How a Multivibrator Works  
A "One-Shot" Multivibrator  
An R-S Flip Flop  
Meet the Oscillator  
Changing Oscillation with Capacitor  
Changing Oscillation with Foreign Substance  
More about Oscillator  
A Push-Pull Oscillator

#### Putting Electronics to Work

CdS Controlled Oscillator  
Frequency Shift Oscillator  
Motion Detector  
Door Alarm  
Rapid LED Display Switching  
Code Practice Unit  
Current Switch  
Two-Tone Buzzer  
Astable Multivibrator  
Monostable Multivibrator  
Code Practice Unit  
The Noisy Light  
Hearing Aid Amplifier  
Light/Sound Code Practice Unit  
Light Controlled Burglar Alarm  
DC-DC Converter  
Count Down Timer  
Transistor Frequency Doubler  
One Transistor Full-Wave Rectifier

#### Radio Circuits

"Crystal Set" Radio

"Funny Transistor" Radio  
Remote Water Level Detector  
IC Radio  
Morse Code Transmitter  
AM Transmitter  
Broadcasting Organ

#### Sonic Zoo and Sound Factory

Plant Growth Stimulator  
Electronic Woodpecker  
Fish Caller  
Electronic Raindrops  
Machine Gun Pulse Detector  
Chirping Bird  
Electronic Bird  
"Horror Movie" Sound Effect  
Sound Machine I  
Sound Machine II  
Multi-Tone Siren  
Digital Rhythm  
Two-IC Electronic Organ

#### Electronic Decision-Makers

Majority Logic Gate  
Electronic Coin Toss  
Electronic Coin Toss II  
Electronic Coin Toss III  
Even or Odd  
Quick Draw Game  
Close-In  
ESP Tester  
The Light Fantastic  
Shooting Game  
Marching LEDs  
Electronic Dice  
Electronic Roulette

#### Operational Amplifier IC Can Do Many Things

Meet the VCO  
Silicon Diode Solar Cell  
Astable Multivibrator Using OP Amplifier  
Pulse Generator  
Experiment of Comparator  
Comparator with Hysteresis  
Constant Current Sources by OP Amplifier  
Non-Inverting Adder  
Touch Switch Using OP Amplifier  
Early Bird  
DC-DC Converter by OP Amplifier  
Inverting Amplifier  
Non-Inverting Amplifier  
Differential Amplifier  
Differential Output Amplifier  
Power Amplifier Using OP Amplifier  
Balanced Transformerless Amplifier  
Three-Stage Differential Amplifier  
VCO Using OP Amplifier  
Voltage Controlled Amplifier  
V-F Converter  
F-V Converter  
Sweep Generator

Multiple-Function IC Project  
Sound Alarm  
Photo Organ  
Vibrato Organ

#### Introducing the Power Amplifier IC

IC Power Amplifier  
IC Power Amplifier II  
Oscillator Using Power Amplifier IC  
CdS Controlled IC Oscillator  
Phase Shift Oscillator  
Intercom  
A Water Service Pipe Sound  
Electronic Klaxon  
Wide Range Audio Frequency Oscillator

#### A Trip to Digital Land

Switching Circuit  
RTL Inverter  
RTL Buffer  
RTL OR Gate  
RTL AND Gate  
Transistor OR Gate  
Transistor AND Gate  
Transistor XOR Gate  
Special NAND Gate  
DTL OR Gate  
DTL AND Gate  
DTL NOR Gate  
DTL NAND Gate  
DTL Exclusive OR Gate  
C-MOS Inverter  
C-MOS Buffer  
C-MOS OR Gate  
C-MOS AND Gate  
C-MOS 3-Input And Gate  
C-MOS NOR Gate  
C-MOS 4-Input NOR Gate  
C-MOS 4-Input NOR Gate II  
DeMorgan's Theorem  
Experiment of Threshold Voltage  
NAND/NOR and Transistor Switch

#### More Adventures in Digital Land

C-MOS XOR Gate  
C-MOS NAND Enable Circuit  
C-MOS AND Enable Circuit  
C-MOS OR Enable Circuit  
A One-Shot NAND Gate  
C-MOS Line Selector  
C-MOS Data Selector  
C-MOS R-S Flip Flop  
C-MOS Flip Flop II  
Set/Reset Buzzer  
Set/Reset Buzzer II  
Set/Reset Buzzer III  
Transistorized Toggle Flip Flop  
NAND Toggle Flip Flop  
J-K Toggle Flip Flop  
C-MOS Astable Multivibrator  
C-MOS J-K Flip Flop  
C-MOS D Flip Flop

C-MOS D Flip Flop II  
R-S-T Flip Flop  
T Type Flip Flop  
C-MOS Latch  
Shift Register  
Touch Switch Using NAND Gate  
Half Adder  
D-Latch  
2-Line to 4-Line Decoder  
Multiplier  
Dual 2-Input Multiplexer  
Two-Stage Frequency Divider

#### Circuits That Count

Basic Counter  
Synchronous Counter  
Asynchronous Counter  
Counter with Line Decoder  
Divide by 4 Counter  
Divide by 4 Counter with Line Decoder  
How a Line Decoder Works  
Multiple Counter  
Binary Counter with Display  
Divide by 3 Counter Display  
Divide by 4 Counter Display  
Up/Down Counter  
Down Counter  
Decade Down Counter  
Decade Down Counter with Display  
Presettable Counter  
Hexadecimal Counter  
Octal Counter  
Random Access Display  
Decade Counter  
BCD Counter with Display  
Octal Counter with Line Decoder  
Octal Counter with Display  
Decade Counter with Display  
Decade Counter with Display II

#### Getting Closer to Computers

BCD to 7-Segment Decoder  
Full Adder  
Decimal to Binary Encoder  
Binary to BCD  
Octal to BCD  
Hexadecimal to BCD  
3-Bit Shift Register

#### Amusement in Digital Land

VCO by NOR Gate  
Pulse-Delayed Circuit  
NAND Gate Tone Generator  
Transistor Timer  
Noise-Signal Discriminator  
Pulse Stretcher  
Bidirectional Buffer  
Various Inverters  
Electronic Switch  
Tone Burst Generator  
Digital Timer  
Digital Timer II  
Ten Count Buzzer  
Press First

Target Range  
Catch the Eight  
SOS Alert  
Wheel of Fortune  
Leapin' LEDs

#### Shakehands of Analog and Digital

Pulse Number Modulation Light Dimmer  
Pulse Width Modulation Light Dimmer  
DC-DC Converter Using the C-MOS Oscillator  
Absolute Value Amplifier  
Window Comparator  
Digital Light Dimmer  
A-D Converter  
D-A Converter  
Photometer with Digital Display  
Surprise and Fun Revisited  
Experiment of Electromagnetic Induction  
Electronic Candle  
Constant Current Circuit  
A Phony Counter  
Alphabet Flasher  
Winking LEDs II  
Delayed Timer II  
Crossing Signal  
Octave Generator  
Sound Out Timer  
Sound Stop  
Big Mouth!  
Light or Sound  
Be Your Own Multivibrator  
Anticipation  
Set/Reset Match

#### Testing and Measuring Circuits

Circuit Continuity Checker  
Acoustic Ohmmeter  
Audio Signal Generator  
Temperature-Sensitive Audio Amplifier  
Water Level Detector  
Battery Checker  
IC Oscillator/Component Tester  
Voltage Drop Alarm  
Current Shut-Down Circuit  
Logic Checker  
Logic Checker II  
Temperature Alarm  
Function Generator

For more advanced Electronics Labs, check out the following:

- PL500 500 In One Electronics Lab

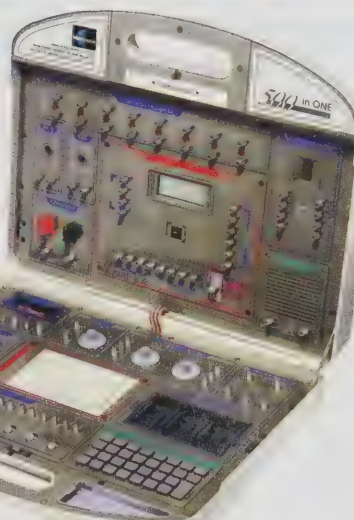
For beginners Electronics Labs, check out the following:

- PL130A 130 In One Electronics Lab
- PL200 200 In One Electronics Lab





## Advanced 500 In 1 Electronics Lab



- ✓ 152 page starter course manual!
- ✓ 78 page advanced course manual!
- ✓ 140 page programming course manual!
- ✓ Quality hinged case construction

### Advanced Learning Courses Plus 500 Separate Projects!

We went one step beyond our 300-in-one lab kit! Yes, 500-in-one, PLUS comprehensive learning course manuals! Build 500 exciting projects, learn schematics, build and learn both analog and digital circuits, and even get into digital programming. 500 projects, 370 pages of comprehensive course manuals, and LOTS OF FUN! (I'd say a lot more... but I don't have the room! WOW, 500 projects!)

If you're looking for smaller Electronics Labs, check out the following

- PL130 130A In One Electronics Lab
- PL200 200 In One Electronics Lab
- PL300 300 In One Electronics Lab

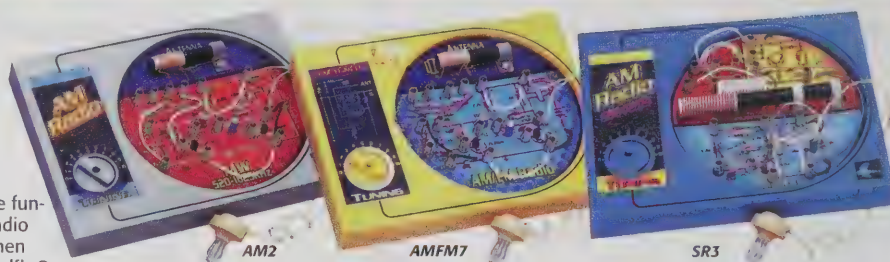
**Includes ALL of the projects in the PL130A... AND  
ALL the projects in the PL300... PLUS  
THE FOLLOWING PROJECTS:**

<p><b>Back to the Basics</b> Capacitors in Series and Parallel</p> <p><b>Electronic "Building Blocks"</b> Low Distortion Sinewave Oscillator</p> <p><b>Putting Electronics to Work</b> Strobe Light Electronic Grandfather Clock Electronic Metronome Twin-T Audio Oscillator Current Switch Shot in the Dark Variable R-C Oscillator Two-Tone Buzzer Sawtooth Wave Oscillator</p> <p><b>Radio Circuits</b> Wireless Code Transmitter</p> <p><b>Sonic Zoo and Sound Factory</b> Two-Tone Patrol Car Siren Pencil Lead Organ Electronic Motorcycle Machine Gun Pulse Detector Electronic Siren Electronic Cat Electronic Organ</p> <p><b>Electronic Decision-Makers</b> Majority Logic Gate Electronic Coin Toss Electronic Coin Toss II Electronic Coin Toss III Even or Odd Quick Draw Game Close-In ESP Tester The Light Fantastic Shooting Game Marching LEDs Electronic Dice Electronic Roulette</p> <p><b>Operational Amplifier IC Can Do Many Things</b> Integrating Circuit Pitch Doubling Circuit Pitch Doubling Circuit II Comparator Schmitt Trigger Circuit Delayed Timer Pulse Frequency Doubler Touch Switch Using OP Amplifier</p> <p><b>Surprise and Fun Revisited</b> Experiment of Electromagnetic Induction Winking LEDs Voice Level Meter Buzzin' LED Son of Buzzin' LED</p> <p><b>Testing and Measuring Circuits</b> Audio Signal Tracer Metal Detector Rain Detector Burglar Alarm Temperature-Sensitive Audio Amplifier</p> <p><b>Learn Basics More</b> A Basic of Control Volume Emitter Follower Basic Operation of Zener Diode Zener Voltage Checker Zener Voltage Checker II Basic Photo-Transistor Operation Voltage Drop Circuit by Means of Diodes Experimentation of Capacitor</p>	<p>Temperature Characteristic Darlington Circuit (Touch Sensor) Edge-Trigger Circuit RC Type Differentiating Circuit Switch Matrix Circuit Memory Backup Circuit Power on Reset Circuit Constant-Voltage Circuit (Fixed Output) Constant-Voltage Circuit (Variable Output) A Rectifier Circuit by Diode Bridge AGC Circuit Using a Single Transistor Upper/Lower Limiter Circuit Using OP Amplifier Window Comparator II</p> <p><b>Amusement on Sound</b> Multi-Tone Siren Digital Rhythm Two-IC Electronic Organ A Water Service Pipe Sound Electronic Klaxon Sound Machine III Sound Wave Varying with Light Intensity Player Organ Sound of Passing Siren Light Source Sensing Circuit by Sound Electronic Piano Circuit Whistle Generating Circuit Space Gun Car Horn</p> <p><b>More Radio Circuits</b> Morse Code Transmitter Broadcasting Organ FM Transmitter (FM Wireless Microphone)</p> <p><b>To The Game World</b> Quiz Winner Detector Reflex Nerve Test Game Shooting Game II Shot In The Dark II Sound Quiz Stop the Seven High-Power Switch "Lockout, Mr. Blackbeard!" Game Russian Roulette Mole Hitting Game "Janken" Game Ping-Pong Game</p> <p><b>More Adventures in OP Amplifier Circuits</b> Voltage Controlled Amplifier V-F Converter F-V Converter F-V Converter II White Noise Generator Sweep Generator Multiple-Function IC Project Sound Alarm A Sound of Ripples Photo Organ Vibrato Organ</p> <p><b>More About Oscillation</b> Phase Shift Oscillator Wide Range Audio Frequency Oscillator Sawtooth Wave Oscillator II Three Phase Oscillator Wien-Bridge Oscillator Ramp Wave Generator Digital Sine Wave Generator Frequency-Variable Sine Wave Generator Sine Wave Oscillator Using D-A Converter RC Phase-Shift Oscillator Two Sine Waves with Different Phases One-Shot Multivibrator Using IC 555 One-Shot Multivibrator Using J-K Flip-Flop</p>	<p>One-Shot Multivibrator Using OP Amplifier Shakehands of Analog and Digital Pulse Number Modulation Light Dimmer Pulse Width Modulation Light Dimmer DC-DC Converter Using the C-MOS Oscillator Photometer with Digital Display Pulse Width Modulation Light Dimmer II Voltmeter</p> <p><b>Getting Closer to Computer</b> Full Adder Decimal to Binary Encoder Binary to BCD Octal to BCD Hexadecimal to BCD 3-Bit Shift Register BCD-To-Decimal Decoder More Digital Circuits 4-Input Data Selector AND/OR Circuit Using OP Amplifier XOR Using OP Amplifier Time Sharing Display of LEDs LED Lighting-Duty Varying Circuit Using One-Shot Multivibrator LED Blinking-Cycle Varying Circuit Using Astable Multivibrator LCD Static Drive Circuit LCD Dynamic Drive Circuit Testing LCD Display Response LED Drive by 4 Switches Flashing LED by Preset Number Digital Timer (1 to 7 Minutes) Sound Timer Programmable Timer with Down Counter</p> <p><b>Amusement in Electronic Circuits</b> Revolving Light Photo Switch Door Chime Visitor Sensing Chime Using Photo-Transistor Touch VCO Sound Tuning Circuit Crossing-Bell Sound Generator Turn Indicator Staircase Light Switching Control Circuit Pseudo Candle Circuit Lie Detector Light Sensing Circuit Automatic Lighting LED Sound Sensing LED Illumination Lamp Intercom PIP Sound Interphone Electronic Volume Pedestrian Signal Time Counter Led Display Counting Up/Down Circuit An Electronic Pendulum Staircase Light Switching Control Circuit II Lamp Brightness Control Circuit Illumination Circuit with 4-LEDs A Simulated Car Winkers</p> <p><b>Testing and Measuring Circuits</b> Battery Checker Conductivity Tester Transistor Checker Three-Step Water Level Indicator Tachometer Battery Checker II Digital Illuminometer</p> <p><b>Software Projects</b> Light LEDs Light On/Off LEDs</p>	<p>A Binary Counter-Increment Value by ADD Instruction A Binary Counter-Decrement Value by SUB Instruction Light LEDs Sequentially with AND Instruction Light LEDs Sequentially with OR Instruction Turn On and Off LEDs Sequentially with XOR Instruction Moving LEDs Light with ROL Instruction Moving LEDs Light with ROR Instruction Night Rider's LEDs with ROL/ROR Instructions (1) Night Rider's LEDs with ROL/ROR Instructions (2) Binary Counter with INC Instruction Binary Counter with DEC Instruction Sound Do as Do, Re, Mi Sound a Series of Musical Scale Let's Input Data to Program Hidden Key Triggers Sound and Turns All LEDs On Stacked MOV Instructions Changing Order of LEDs by Switch A Musical Scale Sound by S1 Key Arithmetic Addition of Two Binary Values Arithmetic Subtraction of Two Binary Values Arithmetic Multiplication of Two Binary Values Arithmetic Division of Two Binary Values Displays Number 0 to 9 on 7-Segment LED (2) Change Order of Numbers Display on 7-Segment LED (2) Switches S1-S4 Light Hex Number On 7-Seg LED 8-Key Organ Lighting Spade, Diamond, Heart, and Club on the LCDs Display (Basic) Lighting Spade/Heart and Diamond/Club on the LCDs Display Lighting Spade, Diamond, Heart, and Club by Static Drive Circuit Lighting Spade, Diamond, Heart, and Club by 1/2 Duty-1/2 Bias Circuit Lighting Spade/Diamond and Heart/Club by 1/2 Duty-1/2 Bias Circuit Lighting Spade/Diamond and Heart/Club Alternately by 1/2 Duty-1/2 Bias Circuit Lighting Spade, Diamond, Heart, and Club by 1/2 Duty-1/2 Bias Circuit Results of Logical Operations AND, NAND, OR, and NOR Results of Logical Operations XOR and XNOR Results of Logical Operations AND/NAND with 4-Switch Entry Results of Logical Operations with OR/NOR 4-Switch Entry Results of Logical Operations with XOR/XNOR 4-Switch Entry Logical AND/NAND Gate for Driving External Circuit Logical OR/NOR Gate for Driving External Circuit Logical XOR/XNOR Gate for Driving External Circuit Find a Leading Edge of Input Pulse Finding a Trailing Edge of Input Pulse Finding a Leading and Trailing Edge of Input Pulse A Pulse Stretcher Starting a Delayed Pulse Pulse Stretcher By Counting a Clock Counting External Pulse To Advance</p> <p>Decimal Counter Displays Number 0 To 9 on 7-Segment LED (1) Change Order of Numbers Display on 7-Segment (2) Counts an External Clock (1) Counts an External Clock (2) Counts an External Clock (3) Counts an External Clock (4) Counts an External Clock (5) Counts an External Clock (6) 3-Minute Timer Multi-Function Timer (1) 15-Minute Timer with 7-Segment Display Multi-Function Timer (2) Digital Organ with PHOTO-TRANSISTOR (1) Digital Organ with PHOTO-TRANSISTOR (2) Digital Volume Changer (1) Digital Volume Changer (2) Digital Volume Changer (3) Digital Volume Changer (4) Digital Volume Changer (5) Illumination Controlled by PHOTO-TRANSISTOR (1) Illumination Controlled by PHOTO-TRANSISTOR (2) Illumination Controlled by Oscillator and PHOTO-TRANSISTOR (1) Illumination Controlled by Oscillator and PHOTO-TRANSISTOR (2) Illumination with Speed Control (1) Illumination with Speed Control (2) Sawtooth Waveform Generator Triangular Pulse Generator Digital Level Indicator Digital Lux Meter (Display In Binary) 4-Bit A/D Converter (Display In Binary) 4-Bit A/D Converter (Display In Hexadecimal On 7-Segment LED) Digital Lux Meter (Display In Hexadecimal) Audio Level Meter Audio Level Meter with Peak-Holding Capability Lighting Sign Board Digital Dice Digital Roulette Digital Slot Machine Up/Down Counter Digital Metronome Frequency Counter Dynamic Lighting of 7-Segment LED Lighting LED with Pulse Width Modulation Majority Logic Gate (2) Lighting LCD Segments by Static Drive Digital Buzzer Rhythm Box (1) Rhythm Box (2) Rhythm Box (3) Rhythm Box (3) (Hey, sorry for the 5.5 pitch font, but there's only so much room! Editor!)</p>
--	---	---	--



## AM/FM/SW Radio Learning Kits

- ✓ Learn to build your own AM, AM/FM or SW radio!
- ✓ Discover how radios work!
- ✓ Listen to the results!
- ✓ Safe solderless assembly!



As the "Little Brothers" to our Lab Kits, our Radio Learning Kits teach you the fundamentals of modern radio theory and operation, and give you a working radio when you're finished! There's nothing like the feeling of accomplishment when you finish the kit, plug in the battery, and hear it work! Yes, you did it yourself! Our Radio Kits are available in AM Broadcast, AM/FM Broadcast, and AM Shortwave models. Take your pick! All operate on a standard 9V battery (not included).

### AM RADIO

Our AM2 AM Radio kit uses two transistors, 4 resistors and 5 capacitors including a variable capacitor to provide a highly sensitive AM Broadcast Radio. It covers 520 KHz to 1625 KHz and is easy to assemble with safe, solderless connections. The 18 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation.

### AM/FM RADIO

Our AMFM7 AM/FM Radio kit is the next step up from our AM2 kit above. It features the same quality AM radio and adds a factory assembled and aligned FM tuner to cover the 88 MHz to 108 MHz FM broadcast band. Utilizes 2 transistors, 5 resistors, 6 capacitors, 1 diode, and 1 coil to provide reception in either band. The AMFM7 is easy to assemble with safe, solderless connections. The 20 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation.

### AM SHORTWAVE

Our SR3 Dual Band AM Shortwave Radio Kit takes you away from the local AM/FM broadcasters and brings you into the exciting world of Shortwave Radio Listening (SWL)! The preassembled and aligned tuner section adds to the 2 antennas, 4 capacitors, 4 resistors, 1 transistor, and 1 variable capacitor to provide a sensitive Shortwave Radio covering 6 MHz to 8 MHz and 12 MHz to 18 MHz. The SR3 is easy to assemble with safe, solderless connections. The 20 page comprehensive learning and assembly manual covers everything from theory to parts identification and operation. Operates on a standard 9V battery (not included).

AM2

AM/FM7

SR3

AM Radio Kit With Comprehensive Learning Manual

AM/FM Radio Kit With Comprehensive Learning Manual

AM Dual Band Shortwave Radio Kit With Comprehensive Learning Manual

\$11.95

\$12.95

\$16.95



**Start With The Basics...  
And Have Fun Doing It!**

## Entry Level Learning Kits

- ✓ Learn the basics of electronics and electricity!
- ✓ Discover how to listen to AM radio without a battery!
- ✓ Understand and build a working motor!
- ✓ Learn how and why alarm bells work... and build one!
- ✓ Safe solderless connections for the young hobbyist!

Go back in time and discover how radio was first received! Learn the basics of electric motors including forward and reverse action. Plus, while everyone has heard them, learn exactly how an alarm bell works and then build one yourself! These beginner kits are ideal for the inquisitive mind that wants to know "how and why it works". No previous experience in electricity or electronics is required and all kits use safe, solderless connections.

### CRYSTAL RADIO SET

The crystal radio was invented in 1901. It is still the basis of modern-day radio and communications equipment and lives on in a wide variety of radio systems. Go back in time, and learn how radio detection was first done! Without a battery or power supply, you will hear AM broadcasts with your Crystal Radio Set! They contain few parts yet teach many concepts. The comprehensive 16 page manual covers everything from how it works to why it works, with illustrated assembly instructions. Assembly is easy with solderless connections, and no previous electronic experience is necessary. Relive history with a Crystal Set today! *(I built my first crystal radio Set with a cat's whisker in 8th grade!)*

### MOTOR ACTION KIT

Learn the basics of an electric motor with our MA1 Motor Action Kit. Learn what makes motors spin, how to control forward and reverse in a motor, and then build one that works! Includes a fan blade and a color disk to learn how to mix color with a spinning disk! This is a great kit for the kids and for the beginner to learn just what makes the world go round! Easy assembly with solderless connections. Requires two AA batteries (not included).

### BELL ACTION KIT

Ding-a-ling... is that a bell? Yep, we've all heard them but do you know exactly how they work? Our BA1 Bell Action Kit is a perfect learning kit for the beginner or the curious! Learn what makes an electronic alarm bell ring, explore how electromagnetism is used, and how you can change the ringing characteristics of a bell! This kit is fun and safe, using solderless connections. Requires two AA batteries (not included).

CS2

MA1

BA1

Crystal Radio Set

Motor Action Kit

Bell Action Kit

\$10.95

\$11.95

\$11.95

## Super Chemistry Lab

- ✓ Kitchen chemistry fun!
- ✓ 100 fun activities!
- ✓ From electricity to magnetism

**Your Kitchen Is Your Lab!**



What a great place for youngsters to learn the basics of chemistry... their kitchen! And mom and dad will enjoy the fun too!

Over 100 kitchen activities relating to chemistry to keep your imagination wandering with excitement! Includes such fun activities as balloon tricks, gas canoe, making a geyser, cleaning old coins, cola volcano, removing an egg's shell without touching it, making invisible ink, cheese, finding iron in cereal and many more!

The learning guide not only describes the fun activities and chemistry experiments, but explains exactly how they work, and why they work, from a youngster's point of view. A great introduction to chemistry for the budding scientist, in the safety of your own kitchen. From Power Tech.

EDU8350 Super Chemistry Lab Kit

\$26.95

## Radio Controlled Car

- ✓ 7 remote control functions!
- ✓ Includes remote control!
- ✓ Full color assembly manual

**Build It From The Ground Up!**



One of the neatest and most exciting learning kits for the kids! You will be building the Turbo King R/C speedster from the ground up, ending up with a super fast car!

The detailed theory, assembly, and testing manual guides you through basic transmitters, receivers, and electronic switching theories. You'll also learn about gears, motors, integrated circuits, and printed circuit boards! You will construct each segment, explore the circuitry used, and test and troubleshoot it.

The end result? Turbo King with 7 remote functions, flashing top light and a full feature remote control! Electronics runs on a standard 9VDC battery and mechanics run on 4 standard AA batteries, not included. From AmeriKit. *(What a fun way to learn electronics and R/C cars at the same time!)*

AK870 R/C Car Kit

\$29.95





## Practical Soldering Kit

- ✓ Learn soldering and PC boards!
- ✓ Includes practice exercises!
- ✓ Comprehensive training manual

**Learn To Solder!**



**TOP SELLER!**

## Practical Solder & Parts Kit

- ✓ Learn soldering, boards, and components!
- ✓ Learn color codes!
- ✓ Comprehensive course and exam included

**Learn Soldering & Components!**



**TOP SELLER!**

Not only will you learn soldering and desoldering but you will also learn component identification and color codes.

With 163 solder points, you will learn and practice standard soldering, close tolerance soldering, tack soldering and desoldering. Plus you will learn component identification and complete color codes. Even includes a color code calculator! Plus you'll learn voltage and resistance analysis in circuits. Comprehensive manual includes written and visual exams. Project runs on a standard 9VDC battery, not included.

This is a beginner's project specifically designed to teach you the fundamentals of soldering and working with printed circuit boards.

Like any skill, good soldering requires practice as well as an understanding of the principles involved. You will become familiar with PC boards, the hows and whys of soldering, components, component installation, and troubleshooting soldering problems (including solder bridges!). Project runs on a standard 9VDC battery, not included.

SP1A Practical Soldering Kit



\$9.95

SP3B Practical Soldering & Parts Kit



\$9.95

## Practical Fiber Optics Voice & Data Kit

- ✓ Send voice over fiber optic cable!
- ✓ Includes transmitter, receiver, and fiber optic cable!
- ✓ Learn the theory and exactly how it works!
- ✓ Fiber length can be extended

**Fiber Optics, Used For More Than Holiday Decorations!**



Have an adventure with Fiber Optics and learn at the same time! At one time, fiber optics technology was just used for those cute little holiday trees you see at the stores. Then they realized that fiber can be used for communications and data transmission without the problems or line loss of conventional copper wires. Today fiber networks carry the bulk of the telephone, CATV and broadcast television programs. They are quickly replacing land lines, microwave, and satellite communications. Just like SMT, fiber optic technology is the wave of the future!

While this project and course will not build you a nationwide fiber communications network, you WILL learn the basics of fiber optics and its use in telecommunications. The learning kit includes a transmitter board, receiver board, fiber optic cable, and a comprehensive learning course. The transmitter converts an audio signal into a light signal. The receiver accepts the light and converts it back into an electrical signal. You will learn how the converted signal is then reshaped into the proper form to be heard.

Fiber optic cable, its protective covering, and connectors to attach the cable to the transmitter and receiver are also included. PC board soldering is required. The transmitter and receivers both utilize a standard 9VDC battery, not included. FO25 is a great project kit to learn about Fibre Optics. (There, I finally spelled fiber the way it should be... fibre!)

FO30K  
FOC20

Fiber Optics Voice & Data Learning Kit  
Fiber Optic Cable, 1,000µm (sold by the foot)

\$20.95  
\$.85/ft



**Learn & Practice SMT Component Soldering!**

**TOP SELLER!**

## Practical SMT Soldering Course

- ✓ Learn all about those tiny little parts!
- ✓ Develop and practice your SMT soldering skills!
- ✓ Includes SMT training sessions
- ✓ End up with a neat "Decision Maker" project



Surface Mount Technology (SMT) has become a way of life for electronics. Virtually all new high tech products utilize SMT design and components. Even our latest Ramsey kits include various SMT components. There are two problems with SMT: First, the parts are extremely small, at times the size of a pin head! Therefore, you need to have the proper tools, not only to hold them and solder them, but to see them! (Check out the tools section for help!) Secondly, unlike "through hole" parts, SMT components are soldered directly on the surface of the PC board (hence the name SMT!). This is an entirely new method of soldering and it takes practice to get it right. Trust me, I've created a number of solder bridges myself when I first started soldering SMT components!

Taking this course and practicing on the neat little kit will prepare you for the future in electronics. Includes the PC board, all the SMT and other components required, and a comprehensive training course covering all aspects of SMT soldering, desoldering, removing, and component placement. The finished project is a neat little "Decision Maker" that includes 6 flashing SMT LEDs, complete with a professional overlay panel. The finished Decision Maker runs on a standard 9VDC battery, not included. (Hey, I mentioned that I created solder bridges when I first soldered SMT... now I can't even see them without my reading glasses!)

SM200K Practical SMT Soldering Course

\$22.95

### RAMSEY'S TEN COMMANDMENTS OF GOOD PC-BOARD SOLDERING

1. If the soldering iron tip is covered with burned rosin, it can't heat your connection very well.
2. If you heat only the wire and not the wire and PC trace together, a cold, bad connection is likely.
3. If your soldering tip is big enough to bridge two adjoining connections, it probably will!
4. Dirty, grubby solder will contribute to dirty, grubby connections.
5. Any use of acid core (plumbers!) solder in electronics work will destroy everything... DON'T USE IT!
6. A connection in a large area of PC-board copper requires more heat than one pin of an IC.
7. If your connection looks dull or brittle, it's no good.
8. If your connection looks like a ball instead of a shiny cone, it's no good.
9. Thin fresh shiny rosin core solder is easier to use for PC-board work than thicker "hardware store" solder.
10. Pre-tin any stranded wires leading in and out of your PC-board kit project. It will prevent problems later!

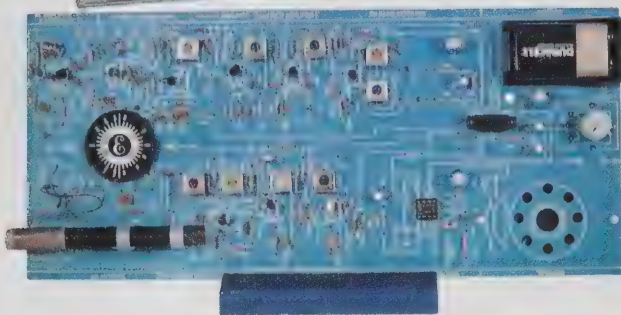
Through Hole Soldering



Surface Mount Soldering







### LEARN ALL ABOUT AM/FM AND IC THEORY!

This Superhet 108 AM/FM Radio Kit is a "superheterodyne" receiver of the standard AM (amplitude modulation) and FM (frequency modulation) broadcast frequencies. The unique design of this kit allows you to place the part over its corresponding symbol in the schematic drawing on the surface of the PC board during assembly. This technique maximizes the learning process while keeping the chance of an assembly error at a minimum. The latest IC design is used to bring you up to speed with today's technology. These specific kits are available in both AM and AM/FM radios.

### HI-TECH CIRCUIT DESIGN!

The unique design of the Superhet 108 includes an integrated circuit (IC), 9 transistors, 4 diodes, and other related resistors, capacitors, coils, and misc. parts. Because good soldering practices are important, a soldering guide is also provided as well as a component color code and pictorial identification chart. The radio kit includes a hi-tech blue PC board with the schematic printed on the top surface. The manuals are easy to understand without any previous electronics experience.

### LEARN WHILE BUILDING!

The actual assembly is broken down into 9 sections. The theory of operation for each section, or stage, should be read before the assembly is started. This will provide the student with an understanding of what that stage has been designed to accomplish and how it actually works. After each assembly you will be instructed to make certain tests and measurements to prove that each section is functioning properly. If a test fails to produce the proper results, a troubleshooting guide is provided to help you correct the problem. Each radio PC board has been designed so that no cabinet or enclosure is necessary. A special molded plastic base provides the necessary support to use the radio in any location, properly displaying the work achievement of the student or builder! After all of the stages have been built and tested, a final alignment procedure is provided to peak the performance of the receiver and maximize the Superhet 108's reception capabilities. Runs on a standard 9VDC battery, not included.

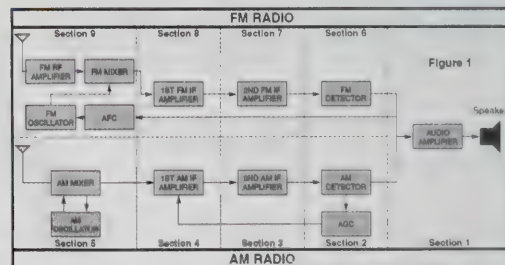
## AM/FM Integrated Circuit Radio & Training Course

KIT



Learn & Build A Superhet IC Based AM/FM Radio Receiver!

- ✓ Learn all about AM/FM radio design & theory!
- ✓ Build a high performance radio with an IC!
- ✓ Step-by-step assembly and test procedures
- ✓ Great for student projects



AMFM108K

AM/FM Integrated Circuit Radio Kit And Training Course

\$36.95



### Integrated Circuit (IC)

Function: noun

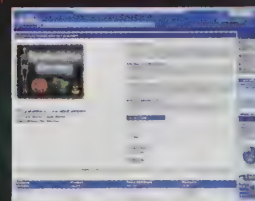
A tiny complex of electronic components and their connections that is produced in or on a small slice of material such as silicon. (More from the "need to know" department here at Ramsey!)

**WIN!**  
**Monthly!**

OUR 8TH YEAR OF GIVEAWAYS!

Register with your E-Mail address to win MONTHLY drawings for equipment valued up to \$300 or more! Each month we award a value package to one lucky person!

**Next month...**  
**IT COULD BE YOU!**



[www.ramseykits.com/win](http://www.ramseykits.com/win)

### TERMS AND CONDITIONS, AKA: THE FINE PRINT!

All of this is printed on saddlestitched envelope/order form, but just in case someone boosted it from this catalog, here it is...again!

**Payment** – Check, money order, and credit card (MC, VISA, American Express, Discover) are all accepted. If paying by credit card, please include the full card number, CVV2 number, and the expiration date. If you are paying by credit card, you must provide the billing address exactly as it appears on your credit card statement.

**Sales Tax** – NY residents must add appropriate sales tax unless a signed resale certificate accompanies your order.

**Prices** – Prices shown are those in effect at the time of publication. We work to hold prices firm, however prices are subject to change without notice. Current prices will prevail at the time an order is placed. Visit [www.ramseykits.com](http://www.ramseykits.com) for any last minute updates!

### Shipping –

**Continental U.S. customers** – We normally ship via UPS or USPS depending on the size and value of the order. If we are shipping via UPS you must provide a physical address, as UPS will not deliver to P.O. Boxes. Add \$7.95 for shipping, handling, and insurance on all orders. Premium 3rd day, 2nd day, Overnight, Overnight AM, and Overnight Saturday shipping is available. CALL 800-446-2295 FOR CURRENT RATES.

**Alaska, Hawaii, Puerto Rico, and APO's & FPO's** – Shipping methods and rates for these locations frequently vary. CALL 800-446-2295 FOR CURRENT RATES.

**Canadian customers** – Shipping methods, Customs requirements, and rates for Canada frequently vary. CALL 800-446-2295 FOR CURRENT RATES. Be aware, UPS shipments may be delayed in customs, therefore USPS is the preferred carrier. **Shipping rates do NOT include any international duty charges.**

**Overseas customers** – There are many shipping options, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Oversized & Heavy** – Items designated as Oversized & Heavy require additional shipping charges, PLEASE CALL 800-446-2295 FOR CURRENT INFORMATION AND RATES.

**Returns** – Examine (do not build) any kit for up to 10 days. If not completely satisfied, return in the original packaging for a full refund. Kits that are partially built cannot be returned or refunded. Wired and tested items can also be returned if in their original packaging, suitable for resale, within 10 days. Returns received after 10 days will be subject to a restocking fee.

**Manual Preview** – Looking at a kit and want to review it more closely? Our manual preview policy lets you purchase most of our manuals for \$5.00 (a few are more). Purchase price of the manual will be credited towards your future associated kit purchase. You can also download most manuals (excluding the schematic!) at no charge from [www.ramseykits.com](http://www.ramseykits.com).





## Ultra Hi-Res Subminiature Color Pinhole Camera

- ✓ 550 Lines of resolution!
- ✓ 0.2 lux Rating lets you capture video in low light situations!
- ✓ 4.3 Mm Conical Pinhole Lens for an amazing 78° field of view!
- ✓ Sony Super HAD technology to eliminate silhouette effect!
- ✓ For use with DVRs or wireless transmitters
- ✓ Single miniplug connections or RCA and 12VDC power breakouts!
- ✓ Incredible quality!

**Wired & Tested**



Hi-Res Camera

One of the most common questions we get is "what about a camera for my RC helicopter, helium balloon, or "hobbyist drone"? This subminiature cone-shaped pinhole camera is the perfect solution to capture great looking video in any environment or application! We utilize them in our industrial test equipment where high resolution of electronic devices is required. We figured why not make them available to our video and RC hobby enthusiasts! Whether you're looking for a tiny camera for a fixed application, a miniature camera for a wireless RC application, a baby monitor, or a hidden camera piece just like the network news magazine shows, this little beauty will win you over with its video quality and application adaptability. The cone-shaped lens gives you incredible versatility when it comes to camera placement, allowing it to fit into spaces no other camera can, like above ceiling tiles or embedded in walls, as well as mobile, RC, and body worn applications.

To accommodate mobile and personal DVR and wireless RC applications, the CCD18 includes a complete kit of disguise camera lens covers, including 4 sets of disguise silver and black screws, and 4 sets of disguise small, medium, and large buttons. Simply replace your buttons with the size that fits, and no one will be the wiser! Or build the camera into your attaché case for mobile use or a book on your bookshelf for baby monitors. Have a small footprint in your RC device, the cone-shaped lens will be easy to mount to provide a stunning 78° field of view! The camera provides an incredible resolution of 550 lines, NTSC format. The package includes the camera terminated in a media tip/ring/sleeve plug for direct connection to a DVR or other device, a RCA breakout for standard signal and power connections, a 9V battery adapter, and a disguise lens button and screw head assortment. Operates on 12VDC, included battery adapter (battery not included), or order our AC121 green 12VDC power adapter.

**CCD18 Subminiature Hi-Res Pinhole Camera Package**

**\$129.95**

**AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$9.95**



**Wired & Tested**

CCD309

**Welcome To The Super Resolution Department!**

## Hi-Res Weatherproof Cameras

- ✓ Small super EX-View lipstick or IR Illuminated bullet!
- ✓ Universal mounting brackets
- ✓ Weatherproof and easy to connect
- ✓ Meets IP57 standards!
- ✓ Runs on 12VDC



The Sony EX-View color CCD sensor in the CCD340 provides the highest resolution and sensitivity available. Formerly only available in larger and much more expensive cameras, the EX-View is perfect when you want the finest picture quality possible. Great for medical coverage, precision inspection, or detailed surveillance use. Ultra thin lipstick design with universal swivel mount, makes it a breeze to install anywhere you need video coverage.

You've seen bullet cameras before, but never like this! Yes, the CCD309 is a high quality color CCD camera during the day, but once the light level falls below minimum requirements it automatically changes to an IR B&W camera, and turns on the built-in TEN IR illuminating LEDs to see in the dark! Now you don't have to sacrifice color operation because you need total darkness coverage at night. You can have both in one camera! That's not all! Just look at the case. Jet black solid aluminum case that's WATERPROOF to IP57 standards! Yes, that includes temporary complete immersion in water! That means you can mount it outdoors without one of those expensive environmental housings! And that saves a LOT of money and makes the installation less conspicuous! Whether you're looking for a tiny high quality lipstick camera or a waterproof IR illuminated camera, we've got you covered. (Our outdoor webcam on our site is a CCD309, check it out at [www.ramseykits.com](http://www.ramseykits.com))

**CCD340 Color Super Hi-Res Lipstick Camera, EX-View CCD Sensor**

**\$189.95**

**CCD309 Weatherproof Color Hi-Res IR Illuminated Camera**

**\$129.95**

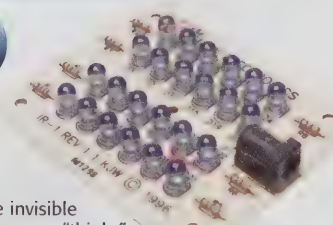
**AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$9.95**

## Infrared (IR) Camera Illuminator

- ✓ Allows you to "See In The Dark"!
- ✓ Amazing illumination!
- ✓ Invisible to the human eye!
- ✓ Works with B&W CCD cameras
- ✓ Operates on 12-15VDC

**Don't Let Darkness Dim Your View!**



Imagine being able to see in total darkness! Well, while you can't, virtually any black & white CCD camera can... with a little help from some invisible infrared light! It's easy with our IR1 Infrared Illuminator! A huge array of 24 high intensity infrared LEDs illuminate a good size area so the camera "thinks" it's daylight! There's nothing magical about it; CCD sensors are sensitive to IR light that you can't see so to the camera the area seems lit perfectly!

The illumination provided is about the same as you would expect from a very bright wide beam flashlight. The illuminator runs on 12-15VDC and is built on a convenient PCB ready to install wherever you need it. One of the neatest things about IR illumination is that it's invisible to the human eye. The illumination will not be detected and can be easily disguised! Order our AC121 power adapter for a simple plug-in connection. Board measures 3" x 2.25". (The mouse that only came out in the basement at night was seen and found!)

**IR1 IR Illuminator Kit**

**\$29.95**

**AC121 12VDC/1.0A Regulated Power Supply, 100-240VAC, Green Level-V Efficiency**

**\$9.95**



**Wired & Tested**

**The Size Of A Quarter? You Bet!**

## The Cubes! Mini Video Transmitters

- ✓ Crystal clear transmission
- ✓ Transmits on CATV channel 59
- ✓ Ultra small for ANY application!

Perfect video transmission from a transmitter you can hide under a quarter and only as thick as a stack of four pennies! Transmits color or B&W with fantastic quality - almost like a direct wire connection to any TV tuned to cable channel 59. Crystal controlled for no frequency drift with performance equal to law enforcement models that cost hundreds more!

Basic 20 mW model transmits up to 300' while the high power 100 mW unit goes up to 1/8 mile. Units run on 9 volts and hook up easily to most any CCD camera module. Any color or black and white video camera will work great with the Cubes. They are fully assembled and tested - just hook-up power and you're on-the-air with a killer system! (These new quarters are getting uglier each year & take bad pictures!)

**C2000 Cube Video Transmitter, Factory Assembled & Tested**

**\$39.95**

**C2001 High Power Cube Video Transmitter, Factory Assembled & Tested**

**\$49.95**





Wired &amp; Tested

KIT

Today's  
Conveniences...  
Tomorrow's New  
Headaches!

## Four-Mode Vehicular Keyless Entry Test Set

- ✓ Troubleshoot vehicular keyless entry and wireless remote control systems!
- ✓ Detects and verifies key fob-to-vehicle signals as well as vehicle-to-key fob signals!
- ✓ Separate visual indicators for the presence of 315/433MHz, 125kHz, 20kHz, and IR signals!
- ✓ Can also test virtually any wireless IR/RF control and building access systems and IR controls!

Ahh!!!! the conveniences of today's technology in our modern world! Voice recognition, LED's instead of incandescent bulbs, on-board computers, on-board hard drives, automatic parallel parking, automatic radar cruise control, and of course, wireless remote controls! They make it so simple, just have the "key" (called a key fob) somewhere in your pocket or purse, get near the vehicle, it knows that you are there! Touch the door handle and the vehicle unlocks. Get in and touch the start button and the vehicle starts. You have yet to use a key through the whole process! And don't forget all the wireless controls for your house lights, building access and entertainment systems. They're so great... until they don't work!

Just like the days of "plugs, points, and condenser" are over, so are the days of having the hardware store grind out a spare key for your car! Now when your keyless access system doesn't work, you need to accurately detect what part of the system is malfunctioning. This could be anything from a dead battery in the key fob, a "brain-dead" key fob, to malfunctioning sensors, antennas, or other system components in the vehicle. The WCT3 is designed for both the car dealer service shops as well as the consumer. Until now there was no way to determine where the system was failing. Please note that the WCT3 simply verifies the generation of the control signals. Indication of signal presence is not an indication the encoded data is valid, nor is it a reader of that code, so don't worry, this will not help anyone steal your car!

First, let's cover a few basics about vehicular keyless entry. In general, (not all systems are created equal), the vehicle itself generates a signal at 125 kHz or 20kHz. This is the signal that is used to "talk" to your individual key fob. Upon receiving the signal, your key fob "returns" a 315MHz signal uniquely encoded with an identification code and unlock command. If the embedded codes of the vehicle and your key fob match, you're in! Once you have "unlocked" the vehicle, and are inside the vehicle, the presence of your key fob is detected in the same way when the "start" button is pressed. If the codes match, the vehicle can be started. Some manufacturers also use Infrared (IR) signals in their key fobs to add additional user control functions to the vehicle. In that case, the key fob generates a modulated IR signal that is received by the vehicle's IR detectors placed throughout the perimeter of the vehicle.

Testing your system is easy. To test the complete key fob-to-vehicle and vehicle-to-key fob communications path just stand close to the vehicle with the WCT3 and your key fob in hand. Press the test button and the WCT3 will detect and display the presence of the vehicle's 125kHz/20kHz signal and, if they "handshake", will also detect and display the presence of your key fob's 315MHz return signal. You can independently test key fob only signals (panic, lock, trunk, etc.) by holding the key fob near the WCT3, pressing the test button, and pushing the function button on the key fob. The same functionality testing can be done with IR key fobs. The modulated IR signal is detected and will illuminate the IR test LED on the test set. If you know a few "secrets" you can also see if the tire pressure sensors/transmitters are generating signals or the built-in garage door opener in your rear view mirror is transmitting a signal! But the WCT3's uses go beyond the automotive world. The majority of building wireless access systems also utilize 125 kHz. Just hold the test set near the building access sensor and the WCT3 will detect the 125 kHz signal. That will help you troubleshoot door access locations that are not working. It gets even better... you can use the WCT3 to test virtually any other 315 MHz, 433 MHz, 125kHz, 20kHz and IR wireless control system to verify generation of a signal. We should rename this "the handy-dandy, universal vehicle entry and wireless remote control tester"!

The WCT3 test set is housed in a compact 2.25" x 4.6" x 9" case and is powered by a standard 9VDC battery (not included). The test set is available as a do-it-yourself hobby kit or factory assembled and tested. For the kit builder, the WCT3 contains both SMT and through-hole components, with 170 solder points. If you're a car dealer, independent service shop, or simply an owner of a newer vehicle with keyless entry, or have wireless entertainment controls you can't afford not to have a WCT3! (Our next kit should be a sensor and a voice alarm that says "hey dummy, just because your car is still running, you still have to give the key fob in your pocket to the valet parking dude"!)

WCT3 Four-Mode Keyless Entry Test Set Kit  
WCT3WT Four-Mode Keyless Entry Test Set Kit, Factory Assembled & Tested

\$59.95  
\$99.95

## Solar Generator Briefcase

- ✓ Powerful 13W solar generator!
- ✓ 14VDC, 750mA
- ✓ Folding briefcase design

Wired &amp; Tested

Steal From  
The Sun!

TOP  
SELLER!

So you're outdoors on that remote Caribbean island that has the small table and two beer bottles with limes sitting on it. The first thing that happens is that your cell phone (that remarkably had service!) goes dead. Next problem, you're sitting there, reading your latest book on your tablet and it goes dead. You look around and there's no electrical outlets for your chargers. Of course there's not, you're on a deserted island with a friend, a table, two beers, and two limes! What DO you do?

This neat "briefcase" opens up and becomes a self-standing solar generator! Just set it up, plug your device's vehicle charger into the DC accessory connector (same as a vehicle accessory power jack) and you're in like Flint! The output of the solar briefcase is connected to a 10' cable to give you plenty of space to set it up outside and cable it inside (the tent on that island!) to run your devices.

The two powerful solar panels generate 13 watts of power, that's 14VDC at a working current of 750mA! That's plenty of power to run or charge any of your DC chargers or devices, from your cell phone to your laptop... and a whole lot more. The solar briefcase also includes a male vehicle power plug and a set of battery clamps to charge your vehicle right from a jack or directly to the battery. The briefcase measures 20.1" x 14.7" x 1.6" and weighs a scant 9.7 lbs. (I'm taking one of these when I move to Fiji with Truman!)

SOL8 Solar Generator Briefcase, Factory Assembled & Tested

\$149.95



Wired &amp; Tested

Keep Your Battery Charged!

## Solar Vehicle Trickle Charger

- ✓ Works with any vehicle!
- ✓ Easy window or visor mounting!
- ✓ Easy connections

We've all been there; your car sat in a parking lot for a week or so, you came back and the battery was flatter than a pancake! It doesn't take much to drain a battery down if the vehicle is not run, and today's vehicles have electronics draining the battery 24/7 whether the car is on or off!

Now you can rest assured you will never have a dead battery! Just keep this handy solar trickle charger plugged into your accessory power jack (cigarette lighter plug for those of you that don't know the new name!) and you are all set. Built-in protection prevents current reversal. Provides 14.5VDC at 125mA. Comes complete with cigarette lighter plug, battery clamps, and window suction cup mounts. If your car sees the sun, your car's battery will never be dead! Measures 13.4" x 4.7" x 0.6", perfect for a sun visor, just flip it down when you leave. (I keep one of these in the "seasonal vehicle" that just sits because I'm too busy writing ad copy for catalogs! The one time I drove it this year, it started right up! Editor...)

SOL5N Solar Vehicle Trickle Charger, Factory Assembled & Tested

\$29.95





## OBDII CarChip Pro Vehicle Data Logger

- ✓ Monitor complete vehicle performance to save gas!
- ✓ Stores up to 300 hours of trip details!
- ✓ Monitor and check for emission issues to help the environment!
- ✓ View and reset engine diagnostic trouble codes and "check engine" lights!
- ✓ Record extreme acceleration and braking!
- ✓ Audible alarms with user-set thresholds for speed, acceleration and braking!
- ✓ Automatic accident log records the last 20 seconds before impact!
- ✓ Simple USB connection to retrieve all stored data
- ✓ Detailed intuitive software is included to review and clear all diagnostic codes, build reports, and export data into spreadsheets or other applications.

Wired & Tested

TOP  
SELLER!



Record speed every second of every trip, keep your car in peak condition, teach your kids safe driving habits... and **SAVE GAS** while you're doing it!



There couldn't be a better time to look into this tiny little OBDII vehicle data logger for your car! It can seriously help your car's performance, teach and enforce good driving habits, help with the environment, and put a good size dent in your fuel costs! Those are some pretty incredible results for a 99 buck part!

What is it you ask? I'm sure by now you've see your repair shop "plug-in" their test set to check your vehicle status. Likewise with annual inspections. The diagnostic connector in your vehicle is called the OBDII port and it is always located on the driver's side of the passenger compartment near the center console. It provides access to a lot of data from the vehicle's ECU (Electronic Control Unit). The OBDII connector is standardized and was made mandatory in 1996 for all cars sold in the US.

The CarChip Pro is an incredible little plug-in data logger that stores and records up to 300 hours of trip details! Just plug it into your OBDII connector and it starts logging time and date for each trip, distance traveled, speed, idle time, hard and extreme accelerations and brakings, and engine diagnostic trouble codes status. Plus you can choose up to 4 additional parameters to log, including RPM, throttle position, engine load, fuel pressure, fuel system status, short term fuel trim, long term fuel trim, battery voltage, timing advance, coolant temperature, air flow rate, intake air temperature, intake manifold pressure, and oxygen sensor! Plus, on top of all that, there is an automatic accident log that stores and records all critical data 20 seconds before any impact! Yep, it's like the black box in the airplanes!

Can it get any better than that? You bet! You know that annoying "check engine light" (multifunction indicator light) that comes on? You will be able to read the diagnostic trouble codes (DTC's) get the status, date, and time of each trouble code, and reset the light!

	Start Time	Duration	Distance Miles	Maximum Speed MPH	Time in Top Speed Band	Brakes Hard Extreme	Accelerations Hard Extreme	Driver	Vehicle
Tri 1	10/6/2007 11:30 AM	0:42:48	22.0	72	0:00:00	1 0	2 0	Mike	Dodge Magnum
Tri 2	10/6/2007 1:22 PM	0:09:02	2.3	40	0:00:00	0 0	1 0	Mike	Dodge Magnum
Tri 3	10/6/2007 1:33 PM	0:23:29	12.5	65	0:00:00	1 0	1 0	Mike	Dodge Magnum
Tri 4	10/6/2007 2:34 PM	0:15:36	15.3	68	0:00:00	0 0	1 0	Mike	Dodge Magnum
Tri 5	10/6/2007 7:23 PM	0:06:06	3.8	80	0:00:00	1 0	3 0	Mike	Dodge Magnum
Tri 6	10/6/2007 7:35 PM	0:03:04	2.0	74	0:00:00	1 0	2 0	Mike	Dodge Magnum
Tri 7	10/10/2007 8:01 AM	0:03:56	1.8	49	0:00:00	1 0	0 0	Mike	Dodge Magnum
Tri 8	10/10/2007 7:40 PM	0:02:48	0.6	35	0:00:00	0 0	0 0	Mike	Dodge Magnum
Tri 9	10/10/2007 8:15 PM	0:03:44	2.0	50	0:00:00	1 0	1 0	Mike	Dodge Magnum
Tri 10	10/11/2007 8:23 AM	0:03:32	1.8	49	0:00:00	0 0	0 0	Mike	Dodge Magnum
Tri 11	10/11/2007 9:54 AM	0:03:28	1.9	53	0:00:00	1 0	2 0	Mike	Dodge Magnum
Tri 12	10/11/2007 10:22 AM	0:03:26	1.9	56	0:00:00	1 0	0 0	Mike	Dodge Magnum
Tri 13	10/11/2007 7:51 PM	0:03:38	1.9	52	0:00:00	0 0	2 0	Mike	Dodge Magnum
Tri 14	10/12/2007 8:16 AM	0:03:54	1.8	52	0:00:00	1 0	0 0	Mike	Dodge Magnum
Tri 15	10/12/2007 11:57 AM	0:07:43	2.3	52	0:00:00	1 0	0 0	Mike	Dodge Magnum
Tri 16	10/12/2007 12:48 PM	0:10:42	3.0	63	0:00:00	0 0	1 0	Mike	Dodge Magnum
Tri 17	10/12/2007 1:02 PM	0:03:38	1.8	60	0:00:00	0 0	0 1	Mike	Dodge Magnum

To access the data, you don't have to bring a laptop or computer to your car, you simply pull the CarChip Pro, and take it to your PC! With the included software and a simple USB connection you can easily view all of this graphically on your computer screen, giving you a moment-by-moment picture of how you (or your employees or kids!) are driving! You can also set thresholds and alarms for speed, acceleration and braking, as well as view the number of times those thresholds were exceeded! Alarms are in the form of an audible beep inside the car! Comprehensive reports are available to view, store, and even copy to spreadsheets and text documents for further analysis.

The CarChip Pro includes the CarChip Pro plug-in data logger, software, USB cable, and detailed instructions. Requires a PC compatible with USB. From Davis Instruments. (One of my kids, the performance car guru, asked to borrow the Hemi, he didn't know it had one of these in it... no more borrowing that vehicle! See the summary to the left!)



8226

Davis OBDII CarChip Pro

\$79.00



Motor vehicle crashes are the number one killer of teenagers and young adults.

Old spark plugs can reduce fuel economy by 30%; a faulty oxygen sensor by 40%.

50% of the emissions from late-model vehicles are due to malfunctions.

A single at-fault accident can raise insurance premiums dramatically.

**Don't wait for a speeding ticket—or worse—to find out how your teen is driving.** You can't be with your teens on every trip they take. But CarChip Pro can.

Use CarChip Pro to set up your own graduated licensing program. Designate the number of driving hours and specific performance required for advancement to the next level. Review speed, accelerations, and decelerations for each trip, with quick starts and hard brakings highlighted in red. All the information you need is just a mouse-click away.

As your teens improve, lift restrictions as a reward, or reinstate them if they needed them in the first place.

And just in case your teen is tempted to sneak in a few rides without CarChip Pro, the unit will log the time and date every time it is disconnected.

Get originally intended CarChip Pro to help you set up your own graduated licensing program. Designate the number of driving hours and specific performance required for advancement to the next level. Review speed, accelerations, and decelerations for each trip, with quick starts and hard brakings highlighted in red. All the information you need is just a mouse-click away.

**Save money and time by keeping your car in peak running condition.** CarChip Pro can help by detecting malfunctions early and taking the guesswork out of diagnosing problems.

CarChip Pro records data from the car's computer control sensors every few seconds, on each and every trip. With CarChip Pro, you can log any 4 out of 23 possible engine parameters, all of which can affect operation, emissions, and fuel economy.

If your car's check engine light comes on, use the software to view the trouble code, its description, and the freeze-frame sensor readings. You'll have the information you need to diagnose and fix the problem. And CarChip Pro will even let you turn the check engine light off when you're done!

Using CarChip Pro, Henry discovered that his coolant temperature was running low. After replacing the thermostat, he found that the coolant level was low. He replaced the coolant and found that the coolant level was low. He replaced the coolant and found that the coolant level was low.

**A smoothly running engine not only saves money, it also helps save the environment.** Your car's check engine light comes on whenever emissions exceed 1½ times the federal standards for that model year.

But don't wait for the check engine light to come on. When there's a malfunction in your car's sensors, the engine burns more gas and exhausts more pollutants. With CarChip Pro, you can keep an eye on selected engine parameters—so you'll always know whether or not your car is running cleanly.

For example, you can tell how efficient your catalytic converter is by keeping an eye on oxygen sensor voltage. Replacing a bad converter can reduce hydrocarbon emissions by 33% or more.

After repeated failed attempts, Henry replaced his coolant temperature sensor. He found that the coolant level was low. He replaced the coolant and found that the coolant level was low. He replaced the coolant and found that the coolant level was low.

**Not at fault? CarChip Pro can give you the information you need to settle a contested insurance claim.** Most cars sold today are equipped with "black boxes." But there's no simple way for you to access the information they record.

CarChip Pro puts this information into your hands, instead of the hands of the automaker or some big insurance company. Whenever there's an accident, CarChip Pro automatically logs the last critical 20 seconds of speed.

You can also see when the brakes were applied. And, if you're monitoring throttle position, you'll see that, too. But don't wait for an accident. By showing exactly how your car is being driven, CarChip Pro can help convince drivers to change their habits. Or it just might be an eye-opener for yourself!

After the radar gun tossed his car, Henry went to work on it. He found that the coolant level was low. He replaced the coolant and found that the coolant level was low. He replaced the coolant and found that the coolant level was low.





## COM3010 Communications Service Monitor

- ✓ 100 kHz to 1.0 GHz frequency range, full duplex!
- ✓ Built-in power meter & 100 watt dummy load!
- ✓ Built-in frequency counter!
- ✓ Built-in sweep generator
- ✓ Built-in SINAD meter
- ✓ Built-in calibrated RSSI meter
- ✓ Built-in RS232 control
- ✓ Built-in Li-Ion battery packs, up to 3 hours operation

**Full Duplex, Loaded With Features... At A Sensible Price!**  
**The Service Monitor That Simply Makes Sense!**

### THE RIGHT CHOICE!

The COM3010 is a full featured communications service monitor engineered and designed to provide highly accurate measurement and monitoring of communications equipment from 100kHz to 1.0GHz with 0.1ppm accuracy. Full duplex design enables independent and separate measurement and testing of transmitter and receiver circuits simultaneously making it the ideal service monitor for the radio technology of today...and tomorrow!

All functions are selected with simple commands and selections on the Elastomeric touch keypad and are displayed on high contrast dual vacuum fluorescent graphical displays. For those on-site measurements, all graphical displays can be "zoomed" to full size to see them across the room! Of course, battery operation is standard to make field use a breeze!

### BUILT-IN POWER METER, FREQUENCY COUNTER, AND A LOT MORE!

Perfect for the two way radio user. Simply key the transmitter while the radio is connected to the generator output for an instantaneous reading of RF output power in either watts or dBm. Yes, we said key the radio into the generator output! The COM3010 incorporates automatic reverse power protection rated at 100 watts with a built-in dummy load. No more burned up pads, no separate wattmeter, and no more worries.

Not sure of the radio frequency? Don't want to plug it into a programmer to interrogate the memory? Even worse, don't want to take it apart to look at the channel elements or crystals? No problem, just key the transmitter. The built-in frequency counter will display the frequency! Counter range is 100kHz to 1.0GHz!

### AUTOMATIC SINAD AND RSSI MEASUREMENTS!

Working on a receiver? Check the true SINAD sensitivity of the receiver with the built-in SINAD meter. Also provides audio loop-back for the equipment being tested. A separate SINAD meter is no longer required! It gets even better! A calibrated Receive Signal Strength Indicator meter makes the COM3010 perfect for testing filter designs and performance as well as cable characteristics.

Such tests are made simple with the availability of user memories. 100 groups of 100 memories allow the storage of a large number of test setups for quick and easy retrieval. See detailed specifications below. *(In my previous life I was the first to buy a Cushman CE3 and CE5 for two-way use... If these were only available then I never would have had to change all those small light bulbs in the dials... all the time, and again, and again. Not to mention the resistors in the pad!)*

### SPECIFICATIONS

#### FEATURES

Display: 2 vacuum fluorescent graphical displays, 16x140 pixels  
 Memories: 100 sequences of 100 registers plus system memories  
 Sweep Features: Linear, octave, and decade of up to 10,000 points  
 Scanner Mode: Allows scanning through a sequence of 100 stores  
 SINAD Meter: Displays reading from -30dB to 0dB of SINAD  
 Freq. Counter: Measures frequency error to 1 Hz. Three counter modes  
 Battery Meter: Displays charge left in batteries  
 Reverse Protection: Generator output protected, switches into 100W internal load and automatically displays power in dBm or watts

#### Power Meter:

Attenuator Output: Displays power from +23dBm to +50dBm,  $\pm .5$ dB (200mW-100W)  
 RSSI Meter: -30dB sample port from load for external equipment  
 Warranty: 80dB of range on receiver side, -40dBm to -120dBm  
 One-year parts and labor with extended Ramsey Technical Support and dedicated COM3010 user forum access

#### GENERATE MODE

Frequency: 100kHz to 1.0GHz in 1Hz steps  
 Freq. Accuracy:  $\pm 0.1$ ppm standard  
 RF Output Level: -140dBm to 0dBm in 0.1dBm steps  
 Level Accuracy:  $\pm 1$ dB, 500kHz to 1GHz,  $\pm 2$ dB 100kHz to 500kHz  
 Units: dBm, uV, mV  
 Leakage: Better than 1uV, 2 turn loop, 1" diameter at 1"  
 Spurious Harmonics: -30dBc typical  
 Non-harmonics: -50dBc typical  
 FM Modulation:  $\pm 75$ kHz max in 0.1Hz steps  
 FM Bandwidth: 0.1Hz - 75kHz  
 Accuracy:  $\pm 0.1$ ppm (inherently tied to reference frequency)  
 AM Modulation: 0 - 75% in 1% steps to -100dBm, 0-50% to -140dBm  
 AM Bandwidth: 10Hz - 10kHz  
 Accuracy:  $\pm 5$ %  
 Distortion: Less than 5%  
 Modulation Internal: 0.1Hz - 3kHz  
 Modulation External: 0.1Hz - 3kHz digital and analog selectable, auto leveling.  
 CTS Encode: 0.1Hz to 999.9Hz at  $\pm 75$ kHz default deviation, variable from .1Hz to 2.5kHz deviation  
 DPL Encode:  $\pm 500$ Hz, Variable from 0.1Hz to 2kHz  
 Two Tone Paging: 0.1Hz - 3kHz, group, voice, tone, battery save modes

#### RECEIVE MODE

Frequency: 100kHz to 1.0GHz in 10Hz steps  
 Sensitivity: Less than 2uV below 512MHz  
 Less than 3uV above 512MHz  
 FM Demod: 0 - 6kHz, 0 - 4kHz  
 AM Demod: 0-100%  
 CTS Decode: In AF frequency count  
 Frequency Error: 0-1MHz, two methods of bargraph and count  
 AF Demod output: 1Vp-p for 5kHz deviation  
 Gates: 0.1 sec, 1 sec

#### FREQUENCY COUNTER

Frequency Range: 100kHz - 1GHz  
 Low Band Sensitivity: Less than 10mV under 70MHz, 1Hz and 10Hz resolutions  
 High Band Sensitivity: Less than 10mV, 70MHz - 1GHz, 10Hz and 100Hz resolutions with divide by ten prescaler  
 IF Frequency: Receiver sensitivity, range limited to bandwidth of current set receiver frequency  $\pm 10$ kHz, 1Hz, and 10Hz resolutions

#### AUDIO COUNTER

Frequency Range: 60Hz - 3000Hz  
 Gates: 10 Sec variable gate for 1 sec quick updates  
 Sensitivity: 35mV at demod audio, ( $\pm 750$ Hz deviation)

#### GENERAL

Receiver input: Has diode protection and fused components  
 Controls: Elastomeric keypad  
 Dummy Load: 100W 30dB feed-through attenuator with sample port on rear, 25% duty cycle full power  
 RS232 Control: Serial interface provides external function control and automated calibration  
 Primary power: 100-240VAC, .6A, 50/60Hz; built in Li-Ion battery  
 Stand: Standard push to lock handle/stand  
 Case Color: Mist gray epoxy powder coat  
 Supplied Accessories: 110VAC EIA cord, BNC-BNC test cable, whip antenna, one BP3010 Li-Ion battery  
 Dimensions: 6" H x 11.9375" W x 14.75" D (152.4mm H x 303.31mm W x 374.65mm D)  
 Weight: 14 lbs (6.5kg)

COM3010  
 BP3010A  
 CC3010

Communications Service Monitor, 100kHz-1GHz  
 Additional Li-Ion Battery Pack, Extends Operation by 1 Hour Approx (Max 3 Packs Total)  
 Matching Black Padded Cordura Carrying Case With Strap

\$3995.00

\$99.95

\$129.95

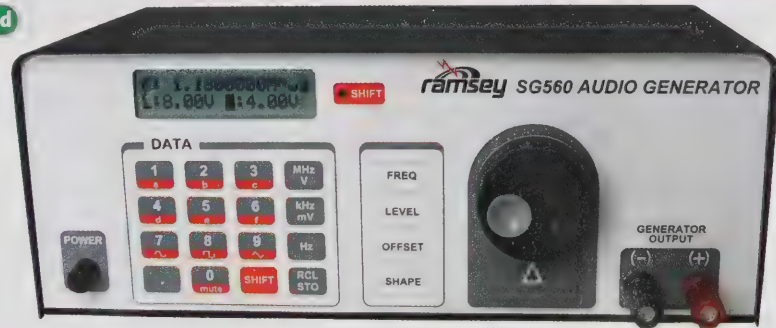


## Audio/RF DDS Signal Generator

- ✓ DDS and SMT technology!
- ✓ Frequency range 0 Hz to 5 MHz with 0.1 Hz resolution!
- ✓ 0 to 10V peak to peak output level
- ✓ Sine, Square, or Triangle waveform output!
- ✓ Non-volatile memory
- ✓ Factory assembled and tested

*The Super Signal Generator...  
DC To 5 MHz In 0.1 Hz Steps!*

Wired & Tested



### SPECIFICATIONS

Frequency Range:	0.0 Hz to 5 MHz
Frequency Resolution:	0.1 Hz
Stability:	±15 ppm
Output Amplitude:	0 to 10 Vp-p
Amplitude Resolution:	10 mV
Amplitude Accuracy:	±0.1 dB from 0 to 3 MHz +0.1 to -1.5 dB from 3 to 5 MHz
Output Waveforms:	Sine, Square, Triangle
Output Impedance:	50 ohm, 25 ohm, 0 ohm (current limited) internally selectable
DC Offset:	0.0 V to 5.0 VDC
Offset Resolution:	10 mV
Display:	High contrast LCD
Entry Method:	Direct entry numeric keypad, incremental rotary encoder
Memory:	6 non-volatile memory locations
Power Requirements:	8 to 16 VDC @ 600mA max. 110VAC power adapter included
Dimensions:	9.625" W x 3.625" H x 5.875" D 244.4mm W x 92mm H x 149.2 mm D

### THE ULTIMATE AUDIO SIG GEN...TO 5 MHz!

The SG560 is more than an audio generator. It is also a signal generator that produces AC signals with DC coupling at the output jacks like a digital signal generator. The versatility of the SG560 will allow you to recreate many basic signals used in testing situations.

The SG560 allows you to generate square waves, sine waves, and triangle waves of any frequency from 0 Hz to 5 MHz in 0.1 Hz steps. The frequency accuracy is tied to a crystal reference with an accuracy of ±15ppm over its full temperature range. You can also step the frequency at any arbitrary increment. For example a step of 37.5kHz can be entered and the dial or shift arrows can be used to step the frequency up and down by this amount.

The SG560 uses a robust output stage for the final driver. It is derived from DSL modems and is essentially a high power opamp. The opamp is capable of delivering 2.5W to a load before going into protective shut-down. It is being used in a differential fashion which means that any common mode noise is cancelled on the output. The output voltage can swing from 10V peak to peak with a 5V DC offset without clipping. For a negative DC voltage output, swap the polarity of the cables attached to the jacks.

The SG560 allows digital entry of the output level with a resolution of 10mV. For example, if you enter 5.55, the SG560 will generate a 5.55V peak to peak waveform at the jacks. The SG560 has an additional option which allows the user to set the output impedance. It can be 50 ohms, 25 ohms, or 0 ohms impedance at the output jacks. With a 50 ohm output impedance a 50 ohm load will drop the output signal level by 1/2 of

the value entered. With 0 ohms a 50 ohm load will not drop the level at all. The 25 ohm output setting can help when driving a capacitive load; the 0 ohm setting should never be used with this type of load.

### ADVANCED FEATURES!

A DC offset may be entered; this is added (or subtracted if the jack connections are reversed) to the AC signal. Rather than the output AC waveform being centered on 0VDC, a set DC voltage can be added to your signal. This allows the performance of tests that are not possible with a basic audio signal generator. For example, a small circuit can be powered by the DC offset as long as it requires less than 2.5W of power and AC signals can be used to check for noise or EMI immunity. The DC offset can also be used to recreate digital signals in the square wave mode. For example, to create TTL square waves, enter 5V for the level and 2.5V for the offset. This will create the 5V (digital '1') and the 0V (digital '0') levels needed for testing and clocking digital circuits. With a signal range of up to 10V peak to peak and 5V of offset, even old 4000 series CMOS signal levels can be recreated! Additionally the SG560 contains 6 non-volatile memory units which save the full system settings: frequency, level, shape, and offset. This allows you to frequency hop or use the memories to "script" repair, testing, and alignment procedures.

### EXTREMELY RELIABLE!

Surface mount technology is used throughout the SG560 making it extremely reliable and accurate. Frequency is entered directly on the sealed membrane keyboard and adjusted with a precision rotary encoder with an oversized knob. Both frequency and output level are displayed on a high contrast, two-line LCD display. The SG560 operates on 8 to 16VDC and includes a standard 110VAC power adapter. Because of the surface mount design the SG560 is only available factory wired and tested. If you are looking for a lab quality signal generator at a super price, the SG560 fits the bill... and a whole lot more!



SG560WT

Audio/RF Signal Generator, Factory Assembled & Tested

\$329.95



Wired & Tested

Measure RF With A  
Standard VOM!

The RF1 is a very sensitive RF detector probe that connects to any digital multimeter and provides a DC voltage output from weak RF signals. This allows very easy tracing of low level RF signals that a counter can't pick up. Wide frequency coverage of 100 KHz to over 1000 MHz lets you track down most any problem in transmitter chains, receiver stages, or even complex PLLs.

Uses exotic, low barrier microwave detector diodes to give exceptional sensitivity which can see signals down to microwatt levels! A great low cost way of checking for RF. Fully assembled and tested, with standard banana plugs for use with any standard VOM, DMM or voltmeter. If you need to measure RF and don't want to spend big bucks, here you go!!

RF1

RF Sniff-It Probe, Assembled & Tested

\$27.95

## Sniff-It RF Detector Probe

- ✓ Use with any DMM or VOM to measure RF!
- ✓ Low cost RF measurement
- ✓ Can also be used as a field strength meter!

## Broadband RF Preamplifier

- ✓ Broadband from 1 MHz to 1000 MHz, usable to 2000 MHz!
- ✓ Low noise figure, less than 2.5dB
- ✓ Improves AM, FM, VHF TV, UHF TV, and HF reception. 50 - 75 ohm imp.
- ✓ Over 25 dB Gain with up to 100 mW of power output!

Ever wish you could "perk-up" your counter or scanner to read weak signals? Or how about boosting that cable TV run to drive sets throughout the house or maybe preamping that TV antenna to bring in that blacked out football game from a distant city? The PR2 broadband preamp is the answer to all these needs as well as many others!

Since the PR2 has such a high compression point of almost 100 milliwatts, you can even use it to boost the power of small, micro transmitters! Microwave MMIC chips from NEC Japan enable the PR2 to have gain up to 2 GHz although we only spec the PR2 to 1 GHz. Runs on 12 VAC/DC or 120 VAC using the included wall adapter. Size: 4" x 2" x 1".

PR2

Broadband Preamp, Factory Assembled & Tested

\$69.95

Wired & Tested

Broadband, Low Noise...  
And 25dB Gain!



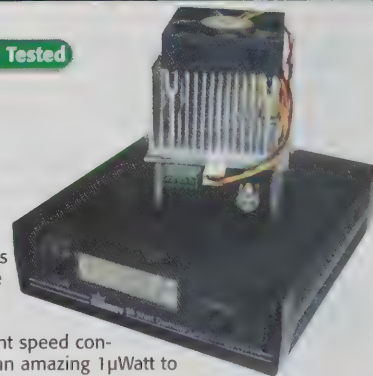




## Professional RF Power Meter

- ✓ Broadband: PM50 10 kHz to 450 MHz  $\pm 0.5\text{dB}$ , 10 kHz to 500 MHz  $\pm 2\text{dB}$ !
- ✓ High dynamic range: better than 77dB!
- ✓ Power Handling: up to 50 Watts continuous!
- ✓ Readings auto-range and are displayed in Watts/dBm/etc.
- ✓ Easy to read LCD display with powerful microprocessor

*High Performance Power Meter...  
At a Low Cost!*



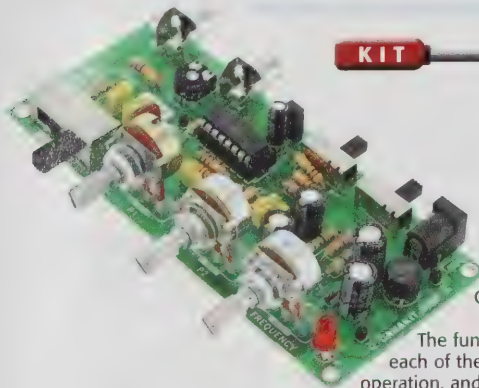
The PM50 digital power meter is what every RF lab technician or micro-broadcaster needs on his/her workbench. Until now, power meters of this capability cost in the thousands! Imagine being able to accurately measure RF power from almost any signal source! Once you use one, you will wonder how you ever did without it!

The PM50 includes a 50 watt, 50 ohm dummy load allowing you to tune your transmitter off air without causing interference. An intelligent speed controlled fan adjusts cooling of the load according to power measured! Extremely wide power range allows continuous measurement from an amazing 1 $\mu$ Watt to 50Watts, all without any manual range switching or setting - that's over 77dB! And accuracy is an astounding  $\pm 0.5\text{dB}$  over the entire specified frequency range! Extreme dynamic range allows you to get meaningful measurements even with transmitters of less than 1mW of power or up to 50 watts! A powerful processor calculates and displays forward and reverse power, AM percent modulation, peak power, and average power. Try doing that with any other power meter for less than a thousand bucks!

Use the PM50 if you need to test transmitters off-air or into a good 50 ohm dummy load. The PM50 includes the matching case & knob set and power adapter so you have everything you need for a complete finished piece of RF test equipment. Case measures 5"W x 1 1/2"H x 5 1/4"D.

PM50 Power Meter/Dummy Load Kit, Includes Case And 110VAC Power Adapter  
PM50WT Factory Assembled & Tested PM50

\$109.95  
\$154.95



KIT Wired & Tested

## 200 KHz Sine/Square Function Generator

- ✓ Frequency range from 10 Hz to 200 KHz!
- ✓ Amplitude and frequency controls for sine/triangle waveforms!
- ✓ Negative and positive pulse width controls for square/pulse waveforms!
- ✓ Full swing and upper half swing selection for square/pulse Waveforms!
- ✓ Excellent frequency stability!
- ✓ Low sine wave distortion (typically 0.5%)!

This extremely versatile function generator is packed with features that make it an indispensable piece of test equipment for any electronic technician or hobbyist! The design is based around the XR2206 monolithic function generator Integrated Circuit, giving it the capability to produce high quality sine, square (or pulse), and triangle waveforms.

The function generator operates over four frequency ranges: 10 Hz to 200 Hz, 100 Hz to 2 KHz, 1 to 20KHz, and 10 to 200KHz. Within each of these ranges, the desired frequency is fully adjustable. The amplitude of the output can be adjusted in the sine/triangle modes of operation, and fixed in the square mode of operation. The maximum output is 4 to 6V peak-to-peak (depending on the supply voltage) in sine/triangle mode and 8 to 12V (again depending on the supply voltage) in square mode. Two RCA jack outputs are built in, one for Sine/Triangle output, and one for Square/Pulse. Supply Voltage: 12-18VDC (Regulated) or 12VAC / 300mA. Max Output Amplitude: Sine & Triangle - 6Vpp (Adjustable) Square & Pulse - 12Vpp (fixed). Dimensions: 4.82" x 2.12". From CanaKit.

CK307 200 KHz Sine/Square Function Generator Kit  
UK307 200 KHz Sine/Square Function Generator, Factory Assembled & Tested

\$39.95  
\$49.95

## 50KHz Sine/Square Wave Function Generator

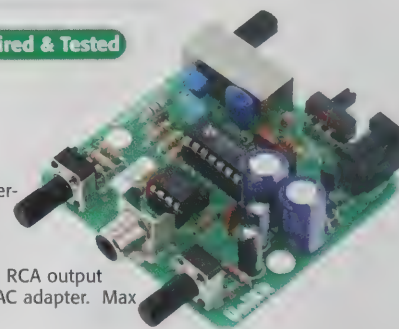
- ✓ Frequency range from 10 Hz to 50 KHz!
- ✓ Amplitude and frequency controls for sine waveforms!
- ✓ Includes RCA output Jack, AC jack, and controls!
- ✓ Optional custom silk-screened enclosure available!

A compact yet versatile signal generator that can generate sine and square wave signals of more than 50 KHz. The signal generator operates over four overlapping frequency ranges: 10 to 200 Hz, 100 Hz to 2 KHz, 1 to 20KHz, and 2 to 50 KHz, and within each of these ranges, the desired frequency is fully adjustable.

The design is based around the XR8038 function generator Integrated Circuit and the circuit incorporates a Sine/Square selector switch, RCA output jack as well as frequency and sine amplitude adjustment potentiometers. An AC jack is also incorporated for easy connection to a 12V AC adapter. Max Output Amplitude: Sine - 0-5Vpp (adjustable), Square - 10Vp-p (fixed full swing). Dimensions: 2.22" x 2.34". From CanaKit.

CK730 50KHz Sine/Square Wave Function Generator  
UK730 50KHz Sine/Square Wave Function Generator, Factory Assembled & Tested  
BX730 Custom Enclosure

\$29.95  
\$39.95  
\$9.95

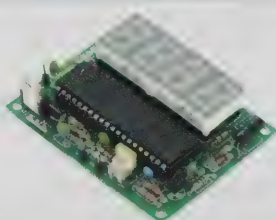


KIT Wired & Tested

## 4-Digit LED Voltmeter

- ✓ Bold 4-Digit .56" 7-Segment display!
- ✓ Negative voltage indicator
- ✓ Quick and accurate!

KIT Wired & Tested



### SPECIFICATIONS

Supply Voltage: 9VDC / 150mA  
Range: 0 to 99.9VDC  
Resolution: 0.1VDC  
Dimensions: 2.85" x 2.17"

This digital voltmeter is ideal to use for measuring the output voltage of your DC power supply or any other DC voltage up to 99.9V. It includes a 3-digit LED readout with a negative voltage indicator. It measures DC voltages from 0 to 99.9V with a resolution of 0.1V. From CanaKit.

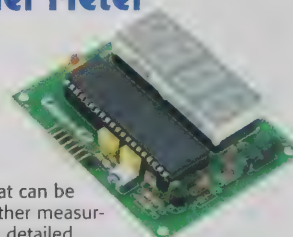
CK148 4-Digit LED Voltmeter Kit  
UK148 4-Digit LED Voltmeter, Factory Assembled & Tested

\$29.95  
\$39.95

## Universal Digital LED Panel Meter

- ✓ Bold 4-Digit .56" 7-Segment display!
- ✓ Works as voltmeter, ammeter, thermometer, etc.!
- ✓ Selectable decimal precision!

KIT Wired & Tested



This bright digital panel meter is a universal circuit that can be used as a voltmeter, ammeter, thermometer or any other measuring device! The included instruction manual contains detailed instructions on how to set up the circuit to perform different kinds of measurements. High precision, high input impedance, selectable decimal point precision... This meter does it all! Supply Voltage: Regulated 5VDC / 200mA. Dimensions: 2.96" x 2.21". From CanaKit.

CK221 Universal Digital LED Panel Meter Kit  
UK221 Universal Digital LED Panel Meter, Asmb & Tested

\$29.95  
\$39.95



**Wired & Tested**

## Multimeter With Temperature, Capacitance, & Frequency

**SPECIFICATIONS**

Display: 3½ Digit LCD, 31 x 61 mm  
DC Volt: 200mV/2/20/200/1000V  $\pm 0.5\%$   
DC Amp: 2m/20m/200m/20A  $\pm 0.8\%$   
AC Volt: 2/20/200/700V  $\pm 0.8\%$   
AC Amp: 20m/200m/20A  $\pm 0.8\%$   
Ohms: 200/2K/20K/200K/2M/20M/200M ohm,  $\pm 0.8\%$   
Continuity buzzer  
Cap: 2000pF/20nF/200nF/2uF/20uF  $\pm 2.5\%$   
Freq: 20KHz  $\pm 1.0\%$   
Temp: -50°C to 1000°C  $\pm 0.75\%$   
Continuity buzzer, hFE & diode test  
Size: 88mm x 170mm x 38mm  
Battery: Standard 9V, included



- ✓ 30 ranges
- ✓ Temperature range: -50°C to 1000°C
- ✓ Capacitance range: 2000pF - 20uF
- ✓ Diode, transistor, & continuity test
- ✓ Overload protection
- ✓ Includes temperature probe

### This is NOT Your Ordinary DMM!

Great for the technician, builder, hobbyist, or auto mechanic, this little DMM is not your typical digital multimeter! Measures DC Volts and AC Volts at 10M ohm impedance. Measures DC and AC current, resistance up to 200M ohm and it doesn't stop there! It also measures capacitance up to 20uF, frequency up to 20 KHz, and temperature all the way up to 1000°C with the included K-type thermocouple.

Of course, it also includes a dedicated transistor socket for NPN and PNP transistor testing, auto power off to save batteries, audible continuity and diode testing, and an oversized display. Sound too good to be true for 40 bucks?

We thought so too! That's why they're here! Comes complete with a professional rubber holster, standard & temperature test probes, user's manual, and a standard 9V battery.

**DVM890F** Multimeter With Temp, Capacitance & Frequency

\$34.95

## Compact Multimeter With Data Hold

- ✓ Backlit display
- ✓ Display Hold
- ✓ Auto polarity
- ✓ Diode, transistor, & continuity test

### Perfect For Your Tool Box!

**Wired & Tested**

**SPECIFICATIONS**

Display: 3½ Digit LCD, backlit, 45 x 18mm  
Data hold  
DC Volt: 200mV/2/20/200/1000V  $\pm 2\%$   
DC Amp: 200u/2m/20m/10A  
AC Volt: 200/600V  
Ohms: 200/2K/20K/200K/2M ohm,  
Continuity buzzer, hFE & diode test  
Size: 68mm x 138mm x 30mm  
Battery: Standard 9V, included



\$13.95

The oversized 3½ digit display has a selectable backlight feature which illuminates the display in the dark. Besides all this, there is a professional "data hold" feature to hold and store a reading. Also features a high impact rubber holster just like the big boys! Includes a great set of test probes and even has the 9V battery installed. All this for under \$20! (That's why there's one in my tool box!)

**DVM850BL** Compact Multimeter With Data Hold

**Wired & Tested**

## Multimeter With Temperature, Capacitance, Frequency, & Data Hold

### The Latest and Greatest DMM!

- ✓ 30 ranges
- ✓ Low-battery indication, overload protection and automatic deactivation
- ✓ Diode, transistor, & continuity tests
- ✓ Includes temperature probe, leads, battery and holster

New for 2008, Velleman has streamlined their DMM offerings with some great new models! The DVM8264 includes all the features you could ask for in a multimeter and more, at a rock bottom price!

Automatic low-battery indication, automatic deactivation, data hold, and the most robust overload protection of any DMM around! Audible continuity alarm lets you check circuits quickly and easily, and the large .7" LCD display is backlight for trouble-free operation under any lighting conditions!

The DVM8264 weighs in at only 12oz including the 9VDC battery! (Not to mention it's the longest title head in the entire catalog!)

**SPECIFICATIONS**

Display: .7" LCD  
DC Volt: 200mV/2/20/200/1000V  $\pm 0.5\%$   
DC Amp: 20m/200m/10A  $\pm 1.5\%$   
AC Volt: 2/20/200/750V  $\pm 0.8\%$   
AC Amp: 2m/200m/10A  $\pm 1\%$   
Ohms: 200/2K/20K/200K/2M/20M/200M ohm,  $\pm 0.8\%$   
Continuity buzzer  
Cap: 20n/200n/2u/20uF  $\pm 4\%$   
Freq: 200KHz  $\pm 1.5\%$   
Temp: -20°C to 1000°C  $\pm 5\%$   
Continuity buzzer, hFE & diode test  
Size: 7.5" x 3.3" x 2.2"  
Battery: Standard 9V, included

**DVM8264** Multimeter With Temp, Capacitance & Frequency

\$39.95

## Dual Display DMM With RS232 Output

- ✓ RS232 output to your PC!
- ✓ Manual/auto range
- ✓ Temperature range
- ✓ Capacitance range
- ✓ Diode, transistor & continuity
- ✓ Analog bar graph
- ✓ Full 3¾ digit display

### Digital Readout, Analog Bargraph, PLUS RS232 Output!

**Wired & Tested**

**SPECIFICATIONS**

Display: 3¾ Digit LCD, backlit, 38 segment analog bar graph, with data hold  
DC Volt: 4/40/400/1000V  $\pm 0.5\%$   
DC Amp: 4mA/400mA/10A  $\pm 1.2\%$   
AC Volt: 4/40/400/750V  $\pm 1.2\%$   
AC Amp: 4mA/400mA/10A  $\pm 1.5\%$   
Ohms: 2400/4k/40k/400k/4m/40m ohm  $\pm 1.2\%$   
Continuity buzzer, diode test, hFE test  
Cap: 4nF/400nF  $\pm 4.0\%$   
Temp: 0-400°C, 401 to 750°C  $\pm 3.0\%$   
RS232: DB9 serial with Windows software  
Size: 78mm x 186mm x 35mm  
Battery: Standard 9V, included



\$69.95

We gave you an inexpensive pocket DMM for under 20 bucks... Then we gave you a super multi-purpose professional multimeter that measured virtually everything for 40 bucks... What's next you ask? You won't believe it!

Everything PLUS RS232 serial data output for connection to your PC! That's right, now you can measure, control, and store your DMM and its readings on a graphical display on your PC!

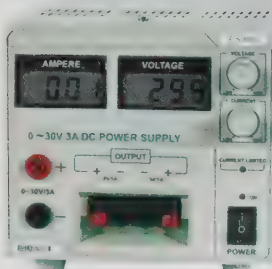
Features both auto and manual ranging with a large 3¾ digit display with a 38 segment analog bargraph. RS232 connection requires a standard serial port on a PC. Includes all software, cable, probes, battery, and case.

**DVM345DI** Dual Display Multimeter With RS232 Output



## Wired &amp; Tested

## 0-30 VDC/+5VDC/+12VDC Lab Power Supply

Put A Lab Quality Supply On  
YOUR Bench!

There's nothing handier than a decent multiple output variable DC power supply for the bench. Now you can have a professional lab quality regulated DC supply on a hobbyist budget!

To start, this supply provides a continuously variable DC output of 0-30 volts DC with a continuously variable DC current limiter up to 2.5 amps! You can set your specific voltage needed for your project and also set the current limit to provide over-current protection to your circuit. Next up, this handy lab supply provides fixed +12VDC at 1A as well as a +5VDC at 1A outputs to drive those sections of your project without building up the regulator circuits in

advance! Outputs are brought out to standard IEC1010 connectors for the 0-30VDC output and easy to connect push terms for the fixed outputs for easy connection to your project. Besides current regulated, the output is also fuse protected.

PS5130

0-30 VDC 2.5A/+12VDC 1A/+5VDC 1A Lab Power Supply

- ✓ Variable output, 0-30VDC at 2.5A!
- ✓ Fixed +5VDC and +12VDC at 1A!
- ✓ Precision LCD out displays!

## SPECIFICATIONS

Output voltage:	0-30VDC, adjustable
Output current:	0-2.5A, adjustable limit 10mA-2.5A
Ripple voltage:	2mV
Ripple current:	5mA
Input power:	110/120VAC, 60Hz
Output connections:	IEC1010 universal & push terminals
Protection:	Current limit and fuse
Dimensions:	6" x 5.75" x 8"
Weight:	6.2 lbs
Case:	Heavy duty steel, gray/white

\$148.95

## Analog Sound Level Meter

- ✓ Measures 50 to 126 dB!
- ✓ 7 separate ranges!
- ✓ ±2dB accuracy!

## SPECIFICATIONS

Range:	up to 126dB
Positions:	60, 70, 80, 90, 100, 110, 120dB
Load impedance:	1kohm min.
Distortion:	Less than 2% at 1kHz, 0.5V
Microphone:	electret condenser microphone, omnidirectional
Precision:	± 2dB at 144dB
Weighting:	A or C
Response:	slow or fast
Output signal:	max. 1V deviation at 1kHz for the entire range
Power supply:	1 9V battery (included)
Battery test:	OK indication between 7 and 10.5V
Battery life:	110 operating hours (alkaline batteries)
Dimensions:	6.3" x 2.4" x 1.7"
Weight:	6.5oz

AVM2050

Analog Sound Level Meter

So, How Loud Is It...  
Really!

So you're at a concert and you want to know exactly how loud it is... You're at work and you're wondering if the ambient noise is below the safe level... You're really wacked out and you want to know if a jet engine at 10 feet really exceeds the threshold of pain... This little analog sound level meter is for you!

It uses A and C weighting filters to accurately simulate the actual listening capability of the human ear! The easy-to-read analog display allows for accurate measurement of environmental noise across a wide range (50 to 126dB).

Useful to measure sound levels in industrial and office settings, traffic/noise reduction studies, or to ensure your noise generation is in compliance with local ordinances. This meter features an omnidirectional condenser microphone with +/- 2dB precision at 144dB. Over 100 hours of operation from one 9V battery (included). From Velleman. (Also helpful in proving to your landlord exactly how annoying the tenants upstairs are!)



\$37.95

## 1KHz Portable Sine Wave Generator

- ✓ Powered by standard 9V Battery
- ✓ Adjustable output amplitude
- ✓ Ideal test-tone for audio systems



Wired &amp; Tested

This portable battery operated 1 KHz sine wave generator produces a clean and stable 1 KHz signal, wherever you need it! Based around the TL084 Quad Op-Amp Integrated Circuit, it provides an affordable and easy solution for testing. Comes complete with built-in output level control (Adjustable from 0-6Vpp), and onboard RCA output jack, plus On/Off switch and 9V battery snap connector. Dimensions: 1.95" x 1.72". From CanaKit.

CK107	1KHz Sine Wave Generator Kit	\$17.95
UK107	1KHz Sine Wave Generator, Factory Asmb & Tested	\$22.95
BX107	Custom Case Set for CK107/UK107	\$12.95

## Breadboard Power Supply

- ✓ Fits directly onto breadboards!
- ✓ Short-Circuit protection!
- ✓ Perfect for prototyping!



Wired &amp; Tested

A very compact yet handy universal power supply that is designed to plug directly onto a standard breadboard. It has a variable mode in which the output voltage can be varied from 1.2VDC to 12VDC. A selectable fixed mode of 3.3VDC or 5VDC is also provided for digital circuits. It can be powered easily by a standard adapter and includes a power switch, adapter jack as well as a heat sink for the regulator. From CanaKit.

## SPECIFICATIONS

Supply Voltage:	12-15VDC Adapter
Output Voltages	
Variable Mode:	Adjustable from 1.2-12VDC
Fixed Mode:	3.3V or 5VDC
Max Output Current:	300mA
Dimensions:	2.17" x 0.99"

CK277	Breadboard Power Supply Kit	\$13.95
UK277	Breadboard Power Supply, Factory Asmb & Tested	\$19.95

## Prototype Design Breadboards

- ✓ Color coded design for easy breadboarding!
- ✓ Guaranteed for 5,000 insertions!
- ✓ Aluminum ground plates for high speed and low noise designs!
- ✓ Additional jumper wire kit available

If you're looking for prototype breadboards for your design and engineering projects, we've got you covered! These breadboards are the highest quality design that are guaranteed for 5,000 wire and component lead insertions!

Each block is a premium non-warping design with non-conductive self adhesive backing. Aluminum ground plates are used to provide the best prototyping of high speed and high frequency designs while maintaining low noise. Each breadboard has an easy to read color coded letter/number matrix to make tie point connection a breeze. Designed for components and wire jumpers with 20-29 AWG (0.3-0.8mm) wire leads.

The WBU206 is mounted on an aluminum back plane with rubber bench top rubber feet. 4 coded binding posts are provided for power or signal connections of your choice. 3 terminal strips, 5 bus strips, 2,390 tie points are included and provide a breadboarding area of 6.9" x 5.8".

Its smaller brother, the WBU202 breadboard block, consists of 1 terminal strip, 2 bus strips, 830 tie points, and provides a breadboarding area of 6.5" x 2.1". Order jumper wire kit WJW70 that includes 140 various jumper wire pieces in 5 different sizes. Each jumper is color coded and insulated with preformed ends.

WBU202	Prototype Breadboard, 1 Terminal Strip, 2 Bus Strips, 830 Tie Points	\$8.95
WBU206	Prototype Breadboard, 3 Terminal Strip, 5 Bus Strips, 2,390 Tie Points	\$29.95
WJW70	Jumper Wire Kit, 140 Pieces	\$6.95

Prototype it without  
Soldering it!

WJW70





## Cable Polarity Checker



- ✓ Checks continuity & polarity!
- ✓ Auto power off!
- ✓ Pushbutton operation!

*Which Way Should It Go?*



We've all been there. You're running speaker wires through your house and you don't know which wire is which for polarity. Well, this neat little kit takes care of it! Simply hook up the remote board to one end and the main board to the other end. LEDs show you opens, shorts, polarity OK, and polarity reversed!

It's that simple! A lot of uses besides speaker cables, think about it! Runs on a standard 9V battery (not included). Features auto power-off for long battery life. Main board measures 2.2" x 1.6" while the remote board measures 1.6" x .3". From Velleman.

MK132

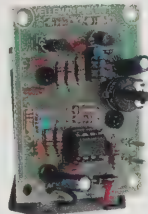
Cable Polarity Checker Kit

\$8.95

## Audio Signal Generator

- ✓ Quick and easy signal generator!
- ✓ Sine, triangle, square, and integrator signals!
- ✓ Standard 1kHz signal
- ✓ Adjustable output level
- ✓ Simple 9V battery operation

*The Quick Answer That Works Great!*



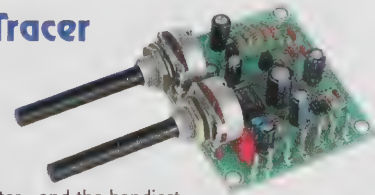
If you've ever worked on amplifier circuits, troubleshooting them is nearly impossible without a signal generator to inject a signal to the input of a stage or device in a circuit. There are expensive lab quality signal generators out there that work very well. But this little generator gets the job done at less than a fraction of the price!

A quick and easy generator provides approximately 1kHz fixed waves with output adjustable from 0 to 100mVrms. Choose sine wave, triangle wave, square wave, or integrator. Powered by a standard 9V battery (not included). Measures 2.2" x 1.6". From Velleman.

## Signal Generator & Tracer

- ✓ Audio generator and tracer!
- ✓ Adjustable output!
- ✓ Adjustable gain sensitivity!

*Generate AND Trace!*



This little circuit is the ultimate troubleshooter... and the handiest thing to have around on your bench! It makes it a breeze to inject a signal into any amplifier in repair to trace the circuit. Likewise, it makes it easy to trace a signal to hear it in a speaker!

The generator portion generates a 1kHz tone with an output impedance of 1.5K ohm. The output level is adjustable from 0-2.5Vrms. The tracer is a high gain amplifier that has an input impedance of 50K ohm with a gain of 40dB! It has an adjustable sensitivity from 3.5mV to 10Vrms. It can also be used as a stand-alone monitor amp. Audio output is half a watt into an 8 ohm speaker. Runs on 7-9VAC or 9-12VDC. Measures 2.4" x 2.1". From Velleman.

MK105 Audio Signal Generator Kit

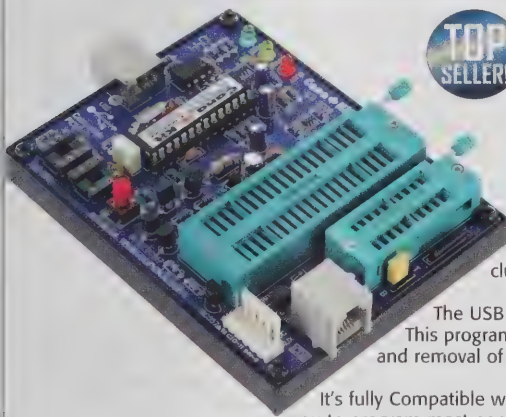


\$6.95

K7000 Signal Generator & Tracer Kit



\$21.95



*Factory Assembled, Wired & Tested, PicKit2 Compatible!*

This is a fully factory assembled and tested professional quality USB PIC Programmer, offering ZIF (Zero Insertion Force) sockets for quick and easy PIC programming! The USB port connection means no mucking around with old serial ports or clunky serial-to-USB adapters. Just connect directly to your computer and you are ready to go!

The USB connection also eliminates the need for a separate power supply, as power is taken directly from your computer's USB port. This programmer is also 100% compatible with the PicKit2 interface, but unlike the PicKit2, it incorporates ZIF sockets for easy insertion and removal of the PIC! I'd say that gives it the edge!

It's fully Compatible with Microchip's MPLAB IDE - in fact when you plug it in, you can control it exactly as you would the original PicKit2, allowing you to program most popular PIC Microcontrollers. Standalone windows programming software fully supported by Microchip is also included, and the unit comes fitted with a sturdy metallic base and a standard ICD RJ11 connector.

In addition, it has onboard status LEDs to indicate programming and power LEDs, and the firmware is fully updatable as new devices are released. Updates to the firmware can be easily downloaded via Microchip's official website. From CanaKit.

UK1300

USB PIC Programmer, Factory Assembled & Tested

\$69.95

## Mini-USB PIC Programmer



**Wired & Tested**

- ✓ Powered via USB - no additional supply required!
- ✓ 100% Compatible with MPLAB IDE
- ✓ Programs a wide range of PICs from 8 to 20-pins
- ✓ Includes ICSP connector for programming PICs up to 40-pins

*Versatile Programming Power in a Small Package!*

A professional yet compact USB PIC Programmer offering a 20-pin ZIF (Zero Insertion Force) socket for easy programming of most Microchip PIC Flash devices that do not require Low-Voltage Programming. This PIC Programmer uses a convenient USB port for connection to the computer as opposed to the traditional Serial port.

This eliminates the need for a separate power supply, as power is taken directly from your computer's USB port. The PIC Programmer also offers In-circuit programming through a standard 6-pin ICSP connector as well as a the built-in 20-pin ZIF socket. This means easy programming of most PICs of up to 20-pins right on the programmer!

This Programmer is also 100% compatible with PicKit 2 interface, and because it incorporates a ZIF socket it can be used as both a production programmer and experimental programmer.

It is also fully compatible with Microchip's MPLAB IDE software, allowing it to program most popular PIC Microcontrollers. The firmware is fully upgradeable, and as new devices are released firmware updates are available via Microchip's official website. Dimensions: 3.76" x 1.79" From CanaKit. (USB Cable not included.)

CK1301

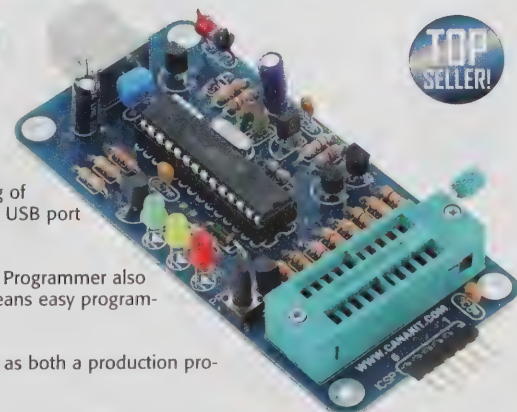
Mini-USB PIC Programmer Kit

\$34.95

UK1301

Mini-USB PIC Programmer, Factory Assembled & Tested

\$49.95





## 100-240VAC to 12VDC 1Amp

- ✓ Worldwide input, 100-240VAC, 50-60 Hz!
- ✓ Regulated output 12VDC, 1 Amp, 12 Watts!
- ✓ 2.1mm x 5.5mm center plus DC connector
- ✓ DUAL ferrite cores for RF and EMI suppression!
- ✓ Approved Green Level-V efficiency!
- ✓ Used with most of our kits requiring 12VDC!
- ✓ The perfect universal 12VDC power for all of your existing equipment and circuits!
- ✓ Replaces our previous AC125 power supply

### Go Green, Be Efficient... Read All This Once!

You will see a change this year with the power supplies and "wallwarts" available for our kits and products. For years, like everyone else, we provided the typical 12V wallwart, which was nothing more than an unregulated power supply that provided anywhere from 12-17 volts unregulated, with the optimum being 12V at the normal load.

Today's technology requires more stringent regulation, filtering, and RF and EMI suppression, as well as conformance with various regulatory mandates regarding efficiency or "going green". Well, we've gone the extra mile for our customers, and had a number of custom power supplies designed to also help bring them into today's technology.

The AC121 is our primary hobby kit power supply, replacing our former workhorse AC125 power supply. To begin with, it's a high performance regulated supply giving you a precise 12VDC output at 1 amp. It's switching design gives you a wide AC input range from 100-240VAC between 50-60Hz to make it compatible with all 110VAC, 220VAC, and all worldwide power standards.

Then, unlike a lot of universal power supplies, we demanded not one, but two RF ferrite cores, one at the input end, and one at the output end, to suppress any inbound and outbound RF and EMI spurious signals.



And finally, in accordance with future green mandates, made it compliant to Level-V efficiency! This is something already required in some EU jurisdictions, and will eventually be required in the US. You're already there, and you've already gone green, with the Ramsey AC121 power supply! Oh, did we forget anything? Yep, we managed to keep the cost the same as the old unregulated AC125 of the past! It just doesn't get any better than that!

AC121 12VDC/1A Power Supply, 100-240VAC Green Level-V \$9.95

## 100-240VAC to 18VDC

- ✓ Worldwide input, 100-240VAC, 50-60 Hz!
- ✓ Regulated output 18VDC, 2.2A or 3.3A
- ✓ 2.1mm x 5.5mm center plus DC connector
- ✓ Approved Green Level-V efficiency!
- ✓ Grounded AC input and cable

When you have some serious equipment to power, the DC input is frequently 18VDC. This holds true for high power audio amplifiers, high voltage converters, and other high performance gear. This is also the required spec for Ramsey UAM series audio amplifier kits.

The SPS18 provides 18VDC at a healthy 2.2 amps. The AC input covers a wide range of 100-240VAC at 50-60Hz, making it compatible throughout the world. The SPS183 is similar to the SPS18 except it provides a heavier current output of 3.3 amps for those extreme projects you may have! Both power supplies meet Level-V efficiency standards.

SPS18 18VDC/2.2A Power Supply, 90-264VAC Green Level-V \$39.95  
SPS183 18VDC/3.3A Power Supply, 90-264VAC Green Level-V \$59.95

## 120VAC to 12VAC 500mA

- ✓ 110/120VAC input, 12VAC output, 500mA!
- ✓ 2.1mm x 5.5mm x 12mm plug!
- ✓ Standard wallwart design but AC!

### When You Need AC Output!

While the bulk of equipment requires a DC power input, there are certain designs that require 12 volts input... but AC instead of DC. Frequently AC line frequency is required in the circuit design, or there is built-in voltage doubler to derive plus and minus operating voltages for the circuit.

Ramsey products that require 12VAC are the SM100, K8099, and QLRD ring downs. A number of other consumer products also require 12VAC, and this is the perfect power supply.

The PWR25 is the tried and true wallwart designed power supply that provides 12VAC at half an amp (500mA). The input is standard 110/120VAC two prong.

PWR25 12VAC/500-mA Power Supply, 110/120VAC Input \$14.95



### For The Extreme Gear!



## 100-240VAC to 12VDC 1.25A

- ✓ Worldwide input, 100-240VAC, 50-60 Hz!
- ✓ Regulated output 12VDC, 1.25 Amp, 15W!
- ✓ Worldwide interchangeable plug set!
- ✓ 2.1mm x 5.5mm center plus DC connector
- ✓ DUAL ferrite cores for RF and EMI suppression!
- ✓ Approved Green Level-V efficiency!
- ✓ Worldwide plug-in supply that can be used with most 12VDC Ramsey kits
- ✓ The perfect worldwide plug-in 12VDC regulated higher current power supply

### Go Green, Be Compliant, Worldwide!

Well, we certainly don't want to bore you with all the details of Level-V efficiency levels, going green, and the change in small power supplies this year... we already did that off to your left! But we will talk about interchangeable AC plugs and worldwide compatibility!

Switching power supplies typically have a broad AC input range to cover various power standards such as 100VAC, 110VAC, 120VAC, 230VAC, 240VAC, etc. Along with a wide range input they also provide regulation, regardless of load, at the rated DC output. When you travel out of the country with your laptop, your charger is typically a switcher, and all you need is an AC plug adapter to match the country standard you are visiting. Our AC121 12VDC switching power supply on the left is a great example, where it is configured to plug into US outlets (NEMA15) outlets, but you can connect it to any power input with a suitable plug adapter.

What if you need a power supply for your specific country? What if you don't have, or don't want to bother finding the correct plug adapter? What if you're on a cruise and you don't want to "rent" one from the purser for \$49 per day? The answer...you simply buy a power supply with interchangeable AC plug blades! It's that simple.

Our PS29 is a brand new regulated switching supply that provides 12VDC at a higher current of 1.25 amps. Like our AC121, it meets Level-V efficiency standards and is compatible in all countries that currently require Level-V. This efficiency level also means that you have gone green, and are saving not only electricity but money! But it doesn't stop there. The power supply includes 4 interchangeable AC plug sets that make the supply compatible with most country outlet standards! All you do is snap the required AC blade onto the front of the power supply, and you can plug it directly into the wall outlet, regardless of the voltage or frequency! The AC power standards that are included with the 4 plug sets are:

- ✓ NEMA 1-15 US, Canada, Mexico, Central America, Japan
- ✓ CEE7/16 Europlug, most countries in Europe other than UK, India
- ✓ BS1363 UK, Ireland, Cyprus, Malta, Malaysia, Singapore, Hong Kong
- ✓ AS3112 Australia, New Zealand, Argentina

Just like our AC121, this worldwide 12VDC power supply is perfect to power the bulk of our hobby kits requiring 12 volts and also makes a perfect universal worldwide 12VDC power supply with its 1.25 amp output and the standard 2.1mm plug. We have also included not one, but two ferrite cores on the output cable for maximum RF and EMI suppression. If you're looking for a 12 volt supply with decent current that you can use virtually anywhere, this is it! If you're looking for 15VDC output at 1.25A, checkout our PS27 worldwide power supply below!

PS29 12VDC/1.2A Power Supply, Worldwide, Green Level-V \$19.95

## 100-240VAC to 15VDC 1.25A

- ✓ Worldwide input, 100-240VAC, 50-60 Hz!
- ✓ Regulated output 15VDC, 1.25 Amp, 18W!
- ✓ Worldwide interchangeable plug set!
- ✓ 2.1mm x 5.5mm center plus DC connector
- ✓ DUAL ferrite cores for RF and EMI suppression!
- ✓ Approved Green Level-V efficiency!
- ✓ The perfect worldwide plug-in 15VDC regulated higher current power supply

### When You Need 15 Volts Worldwide!

Our PS27 is a brand new regulated switching supply that provides 15VDC at a higher current of 1.25 amps. Like our AC121 and PS29, it meets Level-V efficiency standards and is compatible in all countries that currently require Level-V. The power supply includes 4 interchangeable AC plug sets that make the supply compatible with most country outlet standards! All you do is snap the required AC blade onto the front of the power supply, and you can plug it directly into the wall outlet, regardless of the voltage or frequency! The AC power standards that are included with the 4 plug sets are the same as the PS29 above.

Dual ferrite cores on the output cable for maximum RF and EMI suppression. If you're looking for a great 15VDC worldwide power supply for your equipment, you can't go wrong with the PS27!

PS27 15VDC/1.2A Power Supply, Worldwide, Green Level-V \$17.95





## Variable Temperature Soldering Station

- ✓ Variable temperature controlled!
- ✓ 5 to 40 Watt
- ✓ Built-in holder and tip cleaner
- ✓ Interchangeable tips

**Don't Damage Your Board...  
Control The Temperature!**



Here's the ideal entry level soldering station for building your Ramsey kit - and for your bench! Made by Weller, the leader for decades in electronic soldering equipment. The WLC100 is the perfect soldering station for the professional or serious hobbyist who requires higher performance than a standard soldering iron but doesn't want to pay a fortune! The WLC100 soldering station provides variable power from 5 to 40 watts for precise tip temperature control.

Just like the expensive industrial soldering stations! A built-in holder and tip cleaning sponge are included. A pre-tinned 1/8" screwdriver tip comes with the station. If you're looking for quality on a shoestring budget, the WLC100 is for you! Operates on 120VAC, 60Hz. From Weller.

WLC100	Weller Soldering Station, 5-40 Watt Temperature Controlled	\$54.95
ST2	3/32" Screwdriver Tip	\$6.95
ST3	1/8" Screwdriver Tip	\$6.95
ST4	3/16" Screwdriver Tip	\$6.95
ST6	1/32" SMT Screwdriver Tip	\$6.95

## Technician's Solder

- ✓ Standard Electronics 60/40 blend!
- ✓ Lead-Free RoHS 96.5/3.5 blend
- ✓ .032" diameter, 1 pound spool



Whether it's for building your new kit or just for your bench, this is the perfect solder. Don't destroy your kit investment by using the wrong solder or solder with low quality flux core. This solder is made exclusively for electronic applications by one of the leading manufacturers. The size is perfect for board soldering, thru-hole, SMT and more. Available standard or RoHS lead-free compliant. Lead-free is 96.5%TN, 3%AG, .5%CU (not just TN/CU!). 1 lb spools.

RTS12	60/40 Electronics Solder, 1 Pound	\$29.95
RTS16	96.5/3.5 RoHS Lead-Free Solder, 1 Pound	\$59.95

## Helping Hands & Magnifier

- ✓ Built-in magnifier!!
- ✓ Alligator clip holders grip anything!



So you're trying to hold that small board, while holding the transistor you're trying to solder in, and holding the soldering iron, and holding the solder. Wait a minute, that's 4 hands! Not a problem! Just clip the board, junction or component you're working on onto the bench holder, swivel it wherever you want it, and go to work! What, you can't see? It even has a built-in magnifier!

HH4	Helping Hands & Magnifier	\$8.95
-----	---------------------------	--------

## Bench Gooseneck Magnifier

- ✓ 3 1/2" magnifier!
- ✓ 19" flexible gooseneck!



When you're working with small surface mount components (SMT) there's nothing like a stronger set of eyes! Well, we found the perfect and incredibly economical solution! This large 3 1/2" magnifier is attached to a 19" gooseneck that stays right where you put it. And that is usually between your eyes and the PC board you're soldering! Heavy duty cast bench clamp mounts to any bench, desk, or counter top.

VTMG5	Bench Gooseneck Magnifier	\$8.95
-------	---------------------------	--------

## Solder Sucker

- ✓ Eliminate PC board damage!
- ✓ Cleans out holes with ease!



For 5 bucks, this will probably be the most valuable tool you've ever bought! Even the most experienced solderer has problems removing components from PC boards without one! One hand loading and one hand operation. Just heat up the joint, place the special tip over the joint, and squeeze the trigger. Solder is sucked right from the board and even plated-through holes! It's that easy!

SS01	Solder Sucker	\$4.95
------	---------------	--------

## Panavise Bench Vise

- ✓ Holds PC boards at any angle!
- ✓ Heavy duty weighted base!



Trying to solder and unsolder tiny components on small boards can be a challenge for even the most experienced. Here's a gem of a handy vise that is very sturdy and has the flexibility to hold boards at virtually any angle. The heavy base holds even the largest boards without being attached to a bench. Includes 2 7/8" jaws and a large base/parts tray with lockable flex joints.

RTS13	Panavise Bench Vise	\$44.95
-------	---------------------	---------

## Magnifier Tweezers

- ✓ The perfect 2-in-1 tool for SMT!
- ✓ Great for your tool box!



When working with SMT components a good pair of tweezers is a must. And as you know, a good magnifier is also a must. So what do you keep in your tool box to solve THAT problem? Simple, this super handy combination tweezers and magnifier!

The 1" magnifier is mounted on a slick 2 1/2" chrome handle with a fold-out precision tweezers. Focal point for the magnifier is matched to the tweezers point for easy use.

VTMG7	Magnifier Tweezers	\$2.95
-------	--------------------	--------

## OptiVisor Headband Magnifiers

- ✓ See those tiny parts with ease!
- ✓ Professional quality
- ✓ Add-on light and swivel eye loupe
- ✓ A must-have for SMT components!



**See Those Small Parts...  
With Ease!**

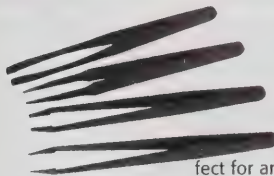
OptiVisor

Probably the handiest helper you can have for working with small electronic parts. When you need to see a close-up view, simply flip the visor down. When done, flip it back up! Fits over your standard glasses. Made in the USA by Donegan Optical and available in 2.5x or 3.5x diopter power.

Additional 2.5x flip up OptiLoupe attaches to one side to provide an additional 2.5x magnification for those really hard to see items! Left in the dark? No problem, the VisorLight clamps to the OptiVisor to provide 6,000 candlepower of Xenon light (operates on 2 standard AA batteries not included) in a battery pack that can either be headband or belt-clip mounted. (I'm over 40, and therefore...these are the greatest things ever invented!)

RTS26	OptiVisor 2.5x Headband Magnifier	\$38.95
RTS25	OptiVisor 3.5x Headband Magnifier	\$39.95
RTS24	OptiLoupe Additional 2.5x Flip Up Screw-On Eye Loupe For OptiVisor	\$9.95
RTS23	VisorLight For OptiVisor, 10" Cord For Headband Mounting	\$22.95
RTS22	VisorLight For OptiVisor, 42" Cord For Belt-Clip Mounting	\$23.95





**Working With SMT?**  
**Protect Those Components!**

We've discussed tweezers and magnifiers while working with SMT components. Working with some highly sensitive components, our engineers asked for some ESD safe tweezers. We looked, we found, and now that they're all set, here they are for you! This set of 4 non-conductive tweezers are perfect for any static sensitive devices you may be working on. And...they are priced right! (These are way beyond Top Sellers! Even beyond way beyond!)

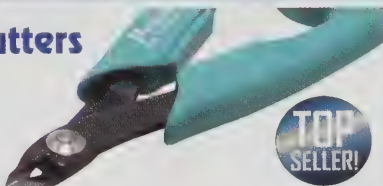
VTTWSET2

Non-Conductive Tweezers Set

\$3.95

## 5" Precision Flush Cutters

- ✓ Micro tips for precision cutting!
- ✓ Copper: 16 AWG
- ✓ Get those hard-to-reach leads!
- ✓ Ergonomic cushioned grips



Normally I wouldn't spend much time writing up a 6 buck pair of dikes, but these are an incredible bang for the buck! When working with PC Boards it's not only important to have a pair of cutters that are sharp, but that cut flush to the edge. Extremely narrow tip reaches into highly restrictive areas and cuts cleanly every time! Features ergonomic green cushioned grips for easy cutting. These are durable enough for a long life of cutting! (Compare to the \$45 name brand!)

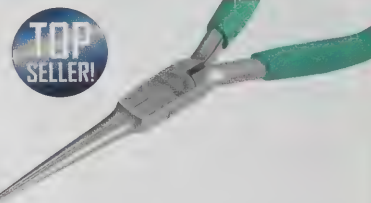
200071

5" Precision Flush Cutters

\$5.95

## Needle-Nosed Pliers

- ✓ Extra-thin tapered nose
- ✓ Cushioned grip handles
- ✓ Great for SMT
- ✓ Extra fine tips



Are you working with wires, PC boards or components and need a really good grip? These pliers will get the job done, even if it's inside a very tight opening! The extremely narrow and thin nose close tight throughout their length. The ultra-thin tip is perfect for working with SMT components. Cushioned green grips mean easy handling and comfort. (The perfect companion to a nice pair of dikes!)

100042

Needle-Nosed Pliers

\$4.95

## Master Tool Kit

- ✓ Over 50 tools!
- ✓ Virtually everything you need!
- ✓ Includes full soldering equipment!
- ✓ High quality attaché case!

**Virtually Every Tool Needed...  
In A Quality Attache Case!**



We are constantly asked about a tool kit that covers it all. Some people don't have the luxury of growing up collecting and building their electronic tools and need to start from scratch!

We searched for an economical kit in a durable carrying case. Catalog space is too limited to list every tool, but suffice it to say, everything but the kitchen sink is included! Virtually all electronic pliers, professional screw drivers, wrenches, files, extractors, heat sink, inspection mirror, scissors, and a whole lot more.

It also includes as high quality soldering iron, tips, desoldering aids, and solder. Leatherette attaché case measures 17.7" x 12.8" x 5.2".

MTK1700

Electronics Master Tool Kit

\$215.95

## 100 Piece Security Bit Set

- ✓ Expanded security bit selection!
- ✓ All common standard bits!
- ✓ 2 bit holders and 2 extensions!

With the extreme popularity of the VTBTS 33 piece kit, we went one step further! This set contains 100 pieces and includes all the security bits in the VTBTS kit and a lot more! Includes the following:

- Phillips bits
- Pozzi bits
- Square bits
- Flat bits
- Antenna remover bits
- Star bits
- Tri-wing bits
- Star with center bits
- Four-wing bits
- Metric hex bits
- Clutch bits
- Fractional hex bits
- Dodecagonal star bits
- Metric hex with center bits
- Fractional hex with center bits
- Wing nut driver
- Socket bit holder
- Magnetic bit holder
- 1" extension
- 2" extension



All bits are chrome vanadium construction for long life, and include a very handy custom case. (This 100 piece set took over Top Seller from the 33 piece set!)

VTBT11

100 Piece Security Bit Set

\$12.95

## Professional Audio Cable Tester

- ✓ Tests virtually all audio cables!
- ✓ Tests each conductor!
- ✓ LED and buzzer continuity test function!
- ✓ 9-way selector switch for cable types
- ✓ Runs on standard 9V battery
- ✓ Built-in battery check
- ✓ Extremely rugged metal case resists field abuse



**Solve A Lot Of Problems...  
And Put Away Your Multimeter!**

Audio cables, man if there was only a standard! It used to be a breeze, XLR for professional balanced audio, 1/4" for mono audio and headphones, and RCA for line level unbalanced audio. Technology changes, and so did connector types!

Jack	Speakon®	Phono
1=Sleeve	1=1	1=Screen
2=Tip	2=+1	2=Hot
3=Ring	3=2	
four remove	4=2	
1/4" TS Mono to 1/4" Mono	1/4" TRS to 1/4" TRS	
1 Sleeve	1 Sleeve, 3 Ring	1 Sleeve
2 Tip	2 Tip	2 Tip
3 Ring	1 Sleeve, 3 Ring (Shorted with sleeve)	3 Ring
		1 Sleeve, 3 Ring
XLR Balanced to XLR Balanced	XLR Unbalanced to XLR Unbalanced	
Pin 1	Pin 1	Pin 1, Pin 3
Pin 2	Pin 2	Pin 2
Pin 3	Pin 3	Pin 1, Pin 3
1/4" TS Mono to XLR Unbalanced	1/4" TRS to XLR Balanced	
1 Sleeve	Pin 1, Pin 3	1 Sleeve
2 Tip	Pin 2	2 Tip
3 Ring	Pin 1, Pin 3 (Shorted with sleeve)	3 Ring
		Pin 3

VTTEST15

Audio Cable Tester

\$44.95

Wired &amp; Tested



The days of standard zip cord for speakers is gone, 1/4" headphone jacks are rare, balanced audio has to plug into unbalanced audio and vice versa, and then of course there are DIN plugs, Speakon® connectors, and various other connectors! It may never end, but this handy audio cable tester will make sure your connections are proper every time!

Testing a cable is a breeze! Plug one end of it into the appropriate jack on the left side of the test box. Plug the other end of the cable into the other appropriate jack on the right side. Then select the rotary switch to "1" to test the connection of pin-1 of the cable. If a green LED lights there is a good connection of pin-1 with a yellow LED lighting above the connector used on the right side. No LED's indicate an open or floating pin-1.

Continue the same procedure by selecting "2" for pin-2, etc. until all contacts have been checked. If the Ground LED illuminates there is a connection from the selected pin to ground/shield/chassis. Two banana jacks are also provided to check test probes, AND to use the box as a continuity tester for other cables. Test probes are included! Runs on a standard 9V battery (not included). Measures 7.5" x 3.5" x 1.5". From Velleman. (Why is this in tools you may wonder? I ran out of room in test equipment!)



## KIT PC-BOARD SOLDERING



Unprofessional soldering practices are the nightmare of ANY electronics manufacturer or service shop. GOOD soldering is essential to the performance of your project. A "cold" solder connection is caused by too little heat OR by heating only the component wire and not the wire and PC copper foil together. The tell-tale sign of too little heat is a dull, rough-looking connection. If you heat only the wire, the solder forms a cute ball around the wire, and rosin may completely insulate your ball from the copper.

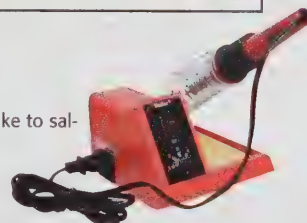
### SOLDER BRIDGES

You probably know that a solder bridge is a perfect and unintended connection of two PC-board points that should NOT be connected. They happen most easily when soldering IC's and other devices with pins close together. The only technique for avoiding solder bridges is for you to be in complete control of the tip of your soldering pencil. The best single tools for avoiding bridges are a proper point on the soldering iron, bright light, perhaps with some magnification of your work, and thin diameter solder.

Study your connection before you zap it with heat and solder. Choose the best "approach angle" for the iron's tip to heat the connection. Plan ahead to make the solder do what YOU want it to do, and you just won't build any solder bridges!

## TEN COMMANDMENTS OF GOOD PC-BOARD SOLDERING

1. If the soldering iron tip is covered with burned rosin, it cannot properly heat your connection
2. If you heat only the wire and not the wire and PC trace together, a cold, bad connection is likely.
3. If your soldering tip is big enough to bridge two adjoining connections, it probably will!
4. Dirty, grubby solder will contribute to dirty, grubby connections.
5. Any use of acid core (plumbers!) solder in electronics work will destroy everything...DON'T USE IT!
6. A connection in a large area of PC-board copper requires more heat than one pin of an IC.
7. If your connection looks dull or brittle, it's no good.
8. If your connection looks like a ball instead of a shiny cone, it's no good.
9. Thin fresh shiny rosin core solder is easier to use for PC-board work than thicker "hardware store" solder.
10. Pre-tin any stranded hookup wires leading in and out of your PC-board kit project. It will prevent problems later!



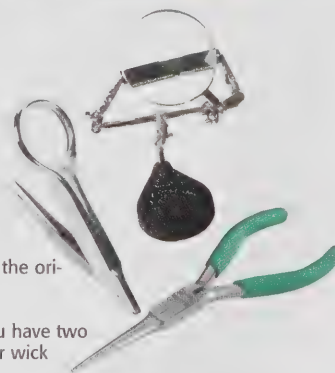
## THE PAINFUL BUT USEFUL ART OF "DE-SOLDERING"

The art of PC-board "de-soldering" is harder than good, basic soldering, but it is a skill necessary for service technicians - or experimenters who like to salvage parts from scrapped PC boards - and for folks who make mistakes in building kits!

Solder is efficient and stubborn, especially once it has adhered correctly to a PC-board connection. Those days of clipping away an old part from big solder lugs, and easily soldering the new part, are gone except for keeping vintage equipment in good repair.

"Desoldering" is the skilled and swift removal of all solder from a PC connection. You re-melt the solder and "suck" it away as cleanly as possible. Most beginners will have reasonable success with any spring-powered vacuum device available from Ramsey or an electronics store. Remember the following...

- Follow kit-building instructions very carefully so that you will not need to do needless "desoldering" to get it working!
- If possible, ask an expert to SHOW you how to "de-solder".
- Use a bright light and magnifier to SEE what you are doing.
- Your goal is to get the connections clean enough so that you can easily re-solder the new part.



## SOLDERING SURFACE MOUNT ICs

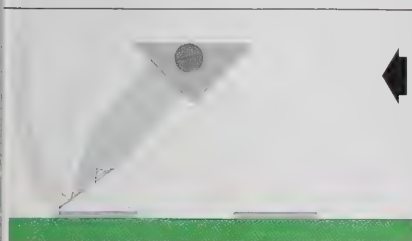
Look for pin one, marked with a dot or notch, and orient it in the same direction as shown in the Parts Layout Diagram and PC board silkscreen. Place it on the board with tweezers so that the pads line up with the pins and use the finest tip that you own on your soldering iron.

Solder only pin one for now. It may help to hold the IC down with a finger or the tweezers while you solder. Once pin one is soldered, check the orientation to make sure that all the pads still line up. If not, re-heat pin one and gently move the part with the tweezers until it is in position.

When finished, solder the pin in the opposite corner of the IC. This prevents accidentally reheating pin one and moving the part. Now that you have two pins soldered, solder all the rest of them while being careful not to short any pins together. Should that happen it is useful to have some solder wick available to "mop" up any extra.

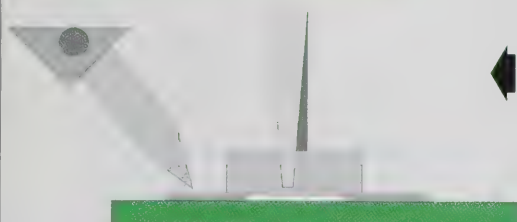
## SURFACE MOUNT SOLDERING TECHNIQUES

The following pictures should help you learn the proper way to solder those tiny surface mount components. Don't be intimidated by their size; by following a few simple procedures you can become an SMT pro in no time!



Patience is the key when installing surface mount components. Typically, the first step (after identifying the component) is to "tin" one of the PC traces that will connect to the part. This is by far the easiest method for surface mount soldering.

Once this is accomplished, the part can be installed by holding it with tweezers in contact with the "tinned" trace and reheating the solder.



Be careful that the iron tip does not come in contact with the "tab" on the body of the chip component when reheating the solder. Overheating of this solder tab can cause a fracture of the bond to the component, causing an intermittent connection.

Once you have the part in place, solder the other side, or in the case of a part with more than two leads, solder the rest of the leads or pins.







## 50 Watt FM Stereo Transmitter

- ✓ 50W RF output, continuous duty!
- ✓ FCC Certified under parts 2, 73, and 74!
- ✓ Automatic monitoring!
- ✓ Automatic VSWR protection!
- ✓ Automatic temperature protection!
- ✓ Automatic battery backup!
- ✓ Digital display of all parameters!
- ✓ Runs on 85 to 264 VAC primary power
- ✓ Super efficient yet quiet forced air cooling!
- ✓ Low profile, only two rack units high



**Get On-The-Air... Stay On-The-Air With The PX50!**

### WE LISTENED!

What did we hear? You wanted an ultra-reliable transmitter with automatic protection circuits that would keep you on the air rather than shut you down. You asked for constant diagnostics on all critical circuits and functions. You wanted to use it anywhere in the world, regardless of input voltage or frequency plan. You wanted to have automatic battery backup to eliminate costly standby generators. You asked for more power than 35 watts but wanted it to run extremely cool while remaining extremely quiet. You wanted full digital display of all functions, parameters, settings and alarms.

### FCC CERTIFIED!

Because of the confusion with the FCC equipment requirements you wanted an **FCC CERTIFIED** transmitter, not just a verified transmitter. You told us what you wanted... **CONSIDER IT DONE!** The PX50 Professional LPFM transmitter, designed specifically to *YOUR* specs!

### USE IT ANYWHERE IN THE WORLD!

We made the primary input power universal for virtually any location worldwide. Give it anything from 85-264VAC between 47-63Hz, or 120-370VDC and you're all set. It doesn't get much easier than that! You can also run the PX50 primary power from 12-14VDC. You can even provide 12-14VDC from a battery (or vehicle) and have automatic backup in case of a power failure! Your listeners will never miss a beat! Using it out of the country with different frequency plans? No problem, with the 100kHz spacing, you are good to go with the PX50!

### SIMPLE TO INSTALL AND OPERATE!

Operation of the PX50 is simple and intuitive via the front panel navigation switch matrix. All functions, controls, and status messages are displayed on the 2 line by 20 character vacuum fluorescent display. Installation of the PX50 is a breeze. A standard Type-N connection is provided for RF Output. Balanced (XLR) left and right audio inputs are provided to properly interface with any audio source you have. In addition, BNC SCA/Digital/RDS inputs are provided along with a quick disconnect connector for a 12 VDC standby/back-up power input. It's simple! Just connect your audio sources and antenna, power it up, set frequency and power level via the front panel navigation switch matrix, and you're on the air! It doesn't get any easier!

### KEEPS YOU ON THE AIR!

The PX50 constantly monitors all of the critical circuits within the transmitter and makes subtle adjustments to various circuit parameters depending upon frequency, temperature, power, audio level, and deviation - in short, it's like having a station engineer constantly monitoring and adjusting on-the-fly! Automatic VSWR protection automatically reduces power output until the VSWR problem is cleared. Likewise, if the power amplifier temperature exceeds 70°C, the transmitter will reduce power output until it cools down below 60°C. You can set automatic Power Reduction On Error (VSWR & Temperature errors) to 85%, 75%, 50%, 25% or full disable of the set power. Full power is restored when the error is cleared. You can also set the Power Restoration Timer for the error testing time to match your specific site environment. If the error is cleared within this time, the transmitter is restored to full power for unattended operation! Your station stays on the air, and needless trips to your tower site are eliminated!

### SPECIFICATIONS

Frequency Range:	87.5 to 108.1 MHz
Primary Power Input:	85-264 VAC, 47-63 Hz; 120-370 VDC
Backup Power Input:	12-14 VDC
Broadcast Modes:	Stereo/Mono + SCA and Digital RDS Inputs.
Bandwidth:	±75 kHz when properly adjusted, auto adjust feature prevents overmodulation.
Separation:	Better than 50 dB (typical 60-70 dB)
Crosstalk:	Better than 50 dB.
Asynchronous:	Better than 60 dB.
THD:	Better than 0.3% with processing.
Audio Inputs:	Standard Balanced Inputs +4 dBu/1.228V rms/3.47 V p-p; -10 to +10 dBm range.
Audio Input Impedance:	22K Ohms
SCA and Digital Inputs:	BNC (50 Ohms)
RF Output:	50W Continuous into a 50 ohm load. Fully adjustable from 1 watt to full power.
Harmonic Suppression:	Better than -81 dBc
Display:	2 lines x 20 characters vacuum fluorescent display.
Controls:	5 navigation controls (Up, Down, Left, Right, Enter)
Cooling:	High CFM Fan, dual filtered front intake, rear exhaust.
Over-Power Protection:	Continuously checks for proper power output to within 5%.
VSWR Protection:	Continuous VSWR monitoring, controlled via Power Reduction On Error and Power Restoration Timer settings.
Over-Temperature Protection:	Auto over-temperature control, 70°C max. fixed, controlled via Power Reduction On Error and Power Restoration Timer settings.
Auto Power Reduction On Error:	Automatically reduces power output to 85%, 75%, 50%, 25% or full disable of set power level.
Auto Power Restoration Timer:	Sets the time interval for automatic error checking to clear reduced power modes and to restore full set power level.
Overmodulation Protection:	Auto control of audio modulation levels, on/off.
Audio Frequency Range:	20 Hz to 16 kHz ±1 dB. Steep "brick wall" 16 kHz low phase shift, low pass filter, down 68 dB @ 19 kHz and above.
Adjustments:	Audio input levels, Modulation Level, Power Level, Frequency (in 100 kHz steps), Stereo/Mono mode, Auto Adjust Modulation mode (On/Off)
Regulatory Approval:	Meets or exceeds FCC 47CFR Parts 15.107(b), 15.109(b); FCC CERTIFIED FCC 47CFR Parts 2, 73, and 74 (ID: PF3PX50)
Dimensions:	Standard 2-unit rack-mount case, 19" wide, 14.25" deep, 3.5" high. (Note: The end user is responsible for complying with all FCC rules & regulations within the US, or any regulations of their respective governing body in regards to the application and use of the PX50).



PX50

Professional 50W LPFM Stereo Transmitter

\$1995.00

**Looking for our FM Broadcast Products?**  
From complete commercial "Radio Stations in a Box" to broadcast acce's visit [ramseybroadcast.com](http://ramseybroadcast.com)



## Professional FM Broadcast Transmitters & Stations

For years, Ramsey Electronics® has been a leading provider of FM and LPFM broadcast transmitters with our PX series. In addition, hundreds of our extremely popular PXB series "Radio Station-In-A-Box" portable FM stations have been deployed around the world. Commercial versions are available for licensed broadcast entities. Visit [www.ramseybroadcast.com](http://www.ramseybroadcast.com). In addition, over 25 custom military and government models are also available directly exclusively from Ramsey's Military and Government Division. Visit [www.ramseygov.com](http://www.ramseygov.com) for more information.



# When Your Success Relies On RF Isolation Testing... **Accept No Substitutes!**

- ✓ Over 25 stock models with thousands of application configurations
- ✓ Isolated visual and hands-on access of your DUT with our patented design!
- ✓ 802.11a/b/g/n, WLAN, WiFi, WiMAX, MIMO, White Space, Etc.
- ✓ CDMA, PCS, GSM, 3G, 4G LTE, Etc.
- ✓ Bluetooth, Wibree, ZigBee
- ✓ RF production, manufacturing, and test
- ✓ Military and Government security
- ✓ Forensics device isolation & investigation
- ✓ Embedded RF device testing
- ✓ Built-in forensics video & audio recording
- ✓ Medical equipment isolation & testing
- ✓ Quick turnaround on custom sizes

## Trust YOUR RF Testing To Our Industry Leading Technology!

RF isolation is nothing new for Ramsey Electronics®. In the early 90's Ramsey took the technician out of the large expensive shielded screen room and put their hands and eyes into a portable "RF Benchtop Screen Room" with our patented STE series RF Shielded test enclosures. With tens of thousands placed in service worldwide, our STE technology has become *the standard* for efficient and cost effective RF testing for practically all wireless components and devices that need to be isolated from the outside RF world. From the earliest RF pagers of yesterday to the latest 3G, UMTS, and 4G LTE devices of today, our enclosures have been front row center throughout their development and testing. Our unique engineering designs have met your latest requirements time and time again. *And that's something you don't achieve overnight, or in a month, or even in a year. It takes decades... and years of customer trust.*

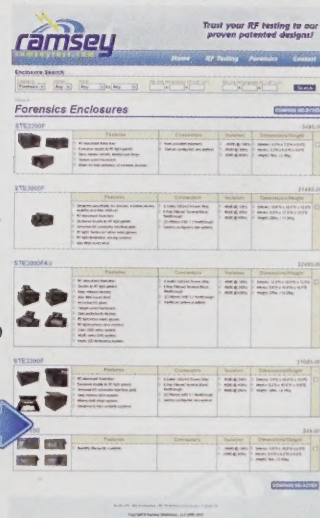
iPhone-5 being used in our Evidence Pouch!



Visually interrogating a 4G LTE iPad-3 in a STE3000!

With a broad product line of over 25 stock models and our original, and often copied, universal I/O panel, we give YOU the configuration options you need while still maintaining near off-the-shelf delivery. Plus, if you have a unique requirement, our custom shop can take it all the way from concept to delivery in record time. All of this within a budget you can live with!

There is no room for error or lack of experience with RF isolation. If YOUR future relies on absolute RF isolation and testing, we've got you covered! Browse our on-line configurator at [ramseytest.com](http://ramseytest.com) today, and put your trust in the hands of our decades of experience.



Visit [www.ramseytest.com](http://www.ramseytest.com)

For Complete Information!







## PRODUCT INDEX

- Active Antennas .....54
- Aircraft Lighting Control .....48
- Aircraft Receivers .....47-49
- AM Learning Kit .....60
- AM Transmitters .....6
- AM/FM Radio IC Training Course .....62
- AM/FM RF Preamp .....54
- Amplifier - Mp3 Player .....23
- Amplifier, Guitar (Pocket) .....24
- Amplifier, Headphones .....24
- Amplifiers - General Audio .....20-26
- Antennas .....54-55
- Antennas - Active .....54
- Audio Cable Tester - Professional .....74
- Audio Generator (Pocket) .....25
- Audio Level Meters .....25,26
- Audio Signal Generators and Tracer67,71
- Audio Volume Auto Gain Controller .....5
- Bell Action Learning Kit .....60
- Bit Sets .....74
- Breadboards & Accessories .....70
- Cable Polarity Checker .....71
- Cable Tester, Pro Audio .....74
- Cameras .....63
- Car Alarm Simulator .....29
- Car, Radio Controlled .....60
- CarChip Vehicle Logger .....65
- Chargers & Adapters .....72
- Chemistry Learning Lab .....60
- Chirping Cricket .....19
- Clap-Activated Switch .....42
- Clock, Jumbo Multifunction .....10
- Clock, Jumbo Single Digit .....10
- Clock, LED Digital .....10
- Color Organ .....15
- Communications Service Monitor .....66
- Counter w/LED Display .....11
- Crystal Radio Learning Kit .....60
- Cutters .....74
- CW Code Practice Oscillator .....51
- CW Keyer .....51
- Data Transmit/Receive/Encode .....57
- Decision Maker (LED) .....14
- Dice, Electronic .....13,14
- Digital Voice Changer .....19
- Dimmer .....37
- DMMs .....69
- DMX Solutions .....17
- Doorbell Chime .....18
- Doppler Direction Finder .....51
- Dripping Faucet Noisemaker .....18
- DTMF Remote Control Interfaces .....39
- Echo Chamber .....18
- Echo/Reverb Effect .....26
- Electrocardiogram ECG Monitor .....27
- Electronic Learning Labs .....56-60
- Encoders, 4-to-16/16-to-4 .....36
- Ethernet Controller, 8-Channel .....45
- Fiber Optics Voice & Data Kit .....61
- FM Antennas .....7
- FM Broadcast Amplifier .....7
- FM Low Pass Filter .....7
- FM Stereo Transmitter (Pro) .....76
- FM Stereo Transmitter Kits .....4-6
- Function Generators .....67, 68
- Ghost Detector .....28
- Guitar Amplifier (Pocket) .....24
- Headphone Amplifiers .....24
- Hi-Res Pressure/Elevation Sensor .....32-33
- Holiday/Seasonal LED Displays .....30-31
- Interface Module, Optically Isolated .....41
- Ion Generator .....27
- IR Camera Illumination .....63
- IR Illuminator for Cameras .....63
- IR Light Audio Communicator .....28
- IR Light Barrier Alarm .....40
- IR Mini Key Fob .....40
- IR Remote Control Solutions .....39,40
- IR Thermometer .....00
- Jumper Wires .....70
- Key Fob Tester .....64
- KeyFob Tester .....64
- Keypad Entry Lock .....42
- Kitchen Timer .....38
- Laser Beam Audio Communicator .....28
- Laser Light Show .....11
- Laser Trip Sensor .....34
- Learning Kits/Labs .....56-62
- LED 3D Cube Display .....14
- LED Animated Bell .....30
- LED Animated Chevron .....12
- LED Animated Ghost .....30
- LED Animated Smiley .....12
- LED Audio Spectrum Displays .....26
- LED Blinky Eyes .....12
- LED Blinky Kits .....13
- LED Christmas Trees .....30,31
- LED Counter Display .....13
- LED Dice .....14
- LED Display Boards .....12
- LED Dual Strobe .....11
- LED Flickering Candle .....31
- LED Halloween Pumpkin .....30
- LED Hearts .....31
- LED High-Power Driver .....11
- LED High-Power Strobe .....11
- LED Light Chaser .....12
- LED Magic Message Wand .....16
- LED Panel Meter .....68
- LED Rolling Clock .....12
- LED Rolling Message .....12
- LED Santa .....30
- LED Smiley .....13
- LED Sound-to-Light .....16, 26
- LED Stars .....31
- LED Superbright Display .....13
- LED Traffic Signal .....12
- LED Windmill .....11
- Light Actuated Switch .....37
- Light Chaser Controller .....15
- Light Computer Control .....16
- Liquid Level Controller .....34
- Logic Interface Module .....36
- Magnifiers .....73
- Metronome .....19
- Microphone - Mini-Electret .....25
- Motion Detector .....34
- Motor Action Learning Kit .....60
- Motor Speed Control .....43-44
- Multimeters .....69
- Multi-Tone Chime .....18
- Music Lights Controller .....15
- Nixie Tube Clocks .....9-10,11
- Parking Radar .....34
- PIC Programmers/Experimenters .....71
- Pink Noise Generator .....19
- Plasma Spark Generator .....27
- Pliers .....74
- Power Adapters and Supplies .....72
- Power Meter, RF .....68
- Power Saver/Timer .....38
- Power Supply Kits .....53
- Power Supply, Breadboard .....70
- Power Supply, Lab .....70
- Power Supply, Vintage Radio .....53
- Preamp, 2-Meter Receiver .....52
- Preamp, Broadband RF .....67
- Preamp, Receivers .....52
- QRP Amateur Radio Gear .....50
- Quiz Table .....14
- Radar Gun Kit .....28
- Radio Controlled Car Kit .....60
- Rat Blaster Varmint Repeller .....35
- Receiver/Preamps .....52
- Record/Playback Module .....25
- Relay Switch-Multifunction .....37
- RF Actuated Relay .....37
- RF Broadband Amplifier .....7
- RF Detector Probe .....67
- RF Power Meter .....68
- RF Preamp .....54
- RF Wireless Link Modules .....52
- Roulette (LED) .....14
- Running Lights Controller .....16
- SCA Subcarrier Decoder .....47
- Seasonal/Holiday LED Displays .....30-31
- Shortwave Radio Learning Kit .....60
- Shortwave Receiver Kit .....47
- Signal Generator, Audio .....71
- Signal Generator, Professional .....67
- Signal Tracer, Audio .....71
- Sine Wave Generator .....70
- Siren Noisemaker .....19
- Solar Generator Briefcase .....64
- Solar Vehicle Trickle Charger .....64
- Solder .....73
- Solder Sucker .....73
- Soldering Iron Tips .....73
- Soldering Kits/Courses .....61
- Soldering Stations .....73
- Sound Effects Generators .....19
- Sound Level Meter .....70
- Sound Recorders .....4,25
- Speech Scrambler/Descrambler .....47
- Steam Engine & Whistle .....18
- Stereo-Ear Amplifier .....25
- Super-Snoop Amplifier .....25
- Table Tennis Video Game .....29
- Tachometer .....41
- Telephone Amplifier .....46
- Telephone Automatic Ring-Downs .....46
- Telephone DTMF Controllers .....39
- Temperature Sensor .....35
- Thermometer, Digital LED .....41
- Thermostats/Controls .....41,42
- Tickle-Stick Shocker .....29
- Timers .....38,42
- Tone Encoders/Decoders .....40
- Tool Kit .....74
- Touch Switch .....37
- Tri-Field Meter .....28
- Trip Sensors .....34
- Tweezers .....73, 74
- Universal Timers .....36,37,38
- USB Relay Board .....45
- Van de Graaff Generators .....29
- Vehicle KeyFob Tester .....64
- VHF Receivers (Mini) .....51
- Vices/Helping Hands .....73
- Video Transmitter - Micro .....63
- Voice Activated Switch .....37
- Voltmeter, LED .....68
- Vu-Meters .....26
- Warble Alarm (Mad Blaster) .....18
- Watch Dog Audio Alarm .....18
- Water Sensor Alarm .....35
- Wheel of Fortune (LED) .....14
- Wind Speed Anemometer .....42
- Wire Detector .....35
- Wireless Link Modules, RF .....52
- Wireless Trip Sensor Alarm .....34
- Xenon Tube Strobe .....16





## NUMERICAL INDEX

8226 .....65	CK254 .....22	K2655 .....18	MK136 .....25	RTS24 .....73	UK1301 .....71
100042 .....74	CK260 .....23	K3400 .....14	MK137 .....40	RTS25 .....73	UK137 .....38
200071 .....74	CK277 .....70	K3502 .....34	MK138 .....41	RTS26 .....73	UK144 .....19
AA7B .....54	CK299 .....13	K4001 .....23	MK141 .....13	RX433 .....52	UK148 .....68
ABCE1 .....53	CK307 .....68	K4003 .....22	MK142 .....30	RX916 .....52	UK154 .....22
ABM1 .....49	CK324 .....26	K4301 .....19	MK144 .....30	RXD433 .....52	UK155 .....30
ABM1WT .....49	CK457 .....16, 26	K4900 .....46	MK145 .....30	RXD433A .....52	UK158 .....38
AC121 .....72	CK550 .....22	K5201 .....16	MK146 .....25	RXD916 .....52	UK161 .....23
AK870 .....60	CK560 .....22	K5300 .....16	MK147 .....11	SA7 .....54	UK176 .....11
AM1C .....6	CK570 .....15	K6600 .....18	MK148 .....13	SCA1C .....47	UK182 .....53
AM2 .....60	CK580 .....15	K7000 .....71	MK149 .....30	SG560WT .....67	UK185 .....15
AM25 .....6	CK670 .....38	K7101 .....35	MK150 .....13	SG7 .....28	UK212 .....41
AMFM108K .....62	CK670CY .....38	K8015 .....37	MK151 .....10	SGC1 .....5	UK214 .....11
AMFM7 .....60	CK730 .....68	K8028 .....37	MK152 .....14	SHA1C .....24	UK221 .....68
APH1 .....4	COM3010 .....66	K8032 .....16	MK153 .....10	SHA1WT .....24	UK239 .....53
AR1C .....47	CPO3 .....51	K8039 .....17	MK155 .....16	SHA2 .....24	UK249 .....42
AR2 .....48	CS2 .....60	K8042 .....53	MK161 .....40	SHA2WT .....24	UK252 .....42
AR2L .....48	CW7C .....51	K8062 .....17	MK162 .....40	SM100 .....54	UK254 .....22
AR2LWT .....48	DC11C .....39	K8065 .....25	MK166 .....30	SM100WT .....54	UK258 .....42
AR2WT .....48	DCI2 .....39	K8067 .....35	MK167 .....30	SM200K .....61	UK260 .....23
AVM2050 .....70	DDF1 .....51	K8071 .....11	MK169R .....30	SM3 .....19	UK264 .....27
BA1 .....60	DDF1WT .....51	K8072 .....17	MK169Y .....30	SMD1C .....43	UK277 .....70
BD416 .....36	DVM345DI .....69	K8089 .....10	MK170 .....30	SOL5N .....64	UK299 .....13
BE164 .....36	DVM8264 .....69	K8094 .....25	MK171 .....19	SOL8 .....64	UK307 .....68
BE66 .....12	DVM850BL .....69	LB56C .....28	MK172 .....30	SP1A .....61	UK324 .....26
BL1 .....13	DVM890F .....69	LBC6K .....28	MK175 .....12	SP3B .....61	UK448 .....26
BL2 .....13	EA3010 .....42	LBC6K2 .....28	MK176 .....12	SPS18 .....72	UK457 .....16
BN9 .....25	ECG1C .....27	LED30B .....14	MK177 .....18	SPS183 .....72	UK457 .....26
C2000 .....63	ECG1WT .....27	LED30W .....14	MK182 .....18	SR2C .....47	UK510 .....42
C2001 .....63	ECS1 .....19	LED51C .....11	MK193 .....14	SR3 .....60	UK520 .....27
CCD18 .....63	EDF1 .....18	LED520 .....11	ML1C .....15	SS01 .....73	UK550 .....22
CCD309 .....63	EDU8350 .....60	LED58 .....11	MSC1C .....43	SS70C .....47	UK560 .....22
CCD340 .....63	FM100B .....5	LLS1 .....11	MTK1700 .....74	SS70WT .....47	UK570 .....15
CK003 .....23	FM100BEX .....5	LPA1C .....7	OM2 .....41	TD1 .....40	UK580 .....15
CK010 .....12	FM100BWT .....5	LPY2 .....55	PG13 .....27	TFM3C .....28	UK670 .....38
CK051 .....53	FM10C .....6	LPY244P .....55	PGA1 .....24	TM100 .....7	UK670CY .....38
CK052 .....53	FM25B .....6	LPY245Y .....55	PGA1WT .....24	TM100 .....55	UK730 .....68
CK104 .....26	FM30B .....4	LPY26 .....55	PL130A .....56	TS1 .....37	UP24B .....32
CK106 .....26	FM35BWT .....4	LPY41 .....55	PL200 .....57	TS4 .....29	UP24BWT .....32
CK107 .....70	FMA200 .....55	LPY915 .....55	PL300 .....58	TT7 .....39	UT5 .....38
CK109 .....26	FMA200E .....7	LSW1 .....13	PL500 .....59	TX433 .....52	UT5A .....36
CK1102 .....44	FMA200E .....7	LS1 .....34	PM50 .....68	TX916 .....52	UT5AS .....36
CK112 .....42	FMA200E .....7	MA1 .....60	PR10 .....52	TXE433 .....52	VG200W .....29
CK1122 .....43	FMLP1 .....7	MB1 .....18	PR100 .....52	TXE433A .....52	VG200WT .....29
CK122 .....23	FMLP1WT .....7	MC1 .....25	PR2 .....67	TXE916 .....52	VG400W .....29
CK127 .....41	FO30K .....61	MD3C .....34	PR20 .....52	UAM2 .....20	VG400WT .....29
CK128 .....26	FOC20 .....61	MK100 .....30	PR40 .....52	UAM4 .....20	VM116 .....17
CK1301 .....71	FR10C .....51	MK101 .....30	PS1503SBU .....70	UAM4SYS .....21	VM138 .....17
CK137 .....38	FR146C .....51	MK105 .....71	PS27 .....72	UAM4SYSWT .....21	VM201 .....45
CK144 .....19	FR1C .....47	MK106 .....19	PS29 .....72	UK003 .....23	VS1 .....37
CK148 .....68	FR220C .....51	MK108 .....35	PWR25 .....72	UK010 .....12	VTBT11 .....74
CK154 .....22	FR6C .....51	MK113 .....19	PX50 .....76	UK051 .....53	VTMG5 .....73
CK155 .....30	H1 .....4	MK116 .....30	QAMP20C .....50	UK052 .....53	VTMG7 .....73
CK158 .....38	HH4 .....73	MK117 .....30	QAMP30C .....50	UK104 .....26	VTTST15 .....74
CK161 .....23	HR20C .....50	MK119 .....14	QAMP40C .....50	UK106 .....26	VTTWSET2 .....74
CK176 .....11	HR30C .....50	MK120 .....40	QLRD1 .....46	UK107 .....70	WBU202 .....70
CK182 .....53	HR40C .....50	MK121 .....29	QLRD4 .....46	UK109 .....26	WBU206 .....70
CK185 .....15	ICI16 .....39	MK122 .....30	QRP20C .....50	UK1102 .....44	WCT3 .....64
CK214 .....11	IG7 .....27	MK123 .....12	QRP30C .....50	UK1104 .....45	WCT3WT .....64
CK221 .....68	IN12XX .....9	MK124 .....12	QRP40C .....50	UK1115 .....44	WW70 .....70
CK239 .....53	IN14XX .....9	MK125 .....37	RB1 .....35	UK112 .....42	WLC100 .....73
CK249 .....42	INGPS .....9	MK126 .....29	RF1 .....67	UK1122 .....43	ZMXXX .....10
CK252 .....42	IR1 .....63	MK128 .....38	RFS1 .....37	UK1125 .....44	
	K1823 .....53	MK130 .....30	RI1 .....36	UK1130 .....44	
	K2579 .....37	MK131 .....12	RTS12 .....73	UK1133 .....44	
	K2601 .....16	MK132 .....71	RTS13 .....73	UK122 .....23	
	K2622 .....54	MK133 .....14	RTS16 .....73	UK127 .....41	
	K2625 .....41	MK134 .....18	RTS22 .....73	UK128 .....26	
	K2636 .....43	MK135 .....14	RTS23 .....73	UK1300 .....71	
	K2639 .....34				







**RAMSEY ELECTRONICS®**  
590 Fishers Station Drive  
Victor, New York 14564  
Phone (585) 924-4560



**We Put The Fun  
In Electronics!**

- ◆ **Build It!**
- ◆ **Learn It!**
- ◆ **Achieve It!**
- ◆ **Enjoy It!**

Make sure to  
include your key  
code when ordering!



\*\*\*\*\*  
VSN21301  
STEVE STROH  
PO BOX 84  
REDMOND WA 98073-0084

PRST STD  
U.S. POSTAGE  
PAID  
PERMIT #38  
FULTON MD

P-20 P4

Ramsey Electronics takes customer privacy very seriously. We do not sell, rent, or provide our customer base to any 3rd party entity. In regards to this catalog, if you feel you have received it in error, or would like to be taken off our mailing list, just let us know. You can automatically unsubscribe at [www.ramseykits.com/catalog](http://www.ramseykits.com/catalog) or call us at 800-446-2295.

**Visit: [www.ramseykits.com](http://www.ramseykits.com)**

**Call: 800-446-2295**

# YOUR FUN HOBBY KIT SOURCE... FOR OVER FOUR DECADES!

## Seasonal LED Displays



Start page 30  
**from \$6.95**

## USB PIC Programmer



See page 71  
**only \$34.95**

## HV Plasma Generator



See page 27  
**only \$64.95**

## Mini Electret Condenser Mic



See page 25  
**only \$3.95**

## Laser Trip Sensor



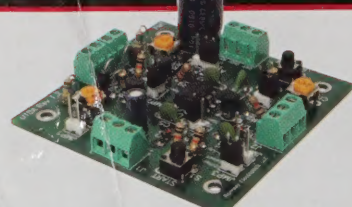
See page 34  
**only \$29.95**

1 2 5 1 4 6

## Next Gen Nixie Clocks!

We dared to combine the soft warm vintage glow of yesterday's Nixie tubes with the most state of the art technologies of today to bring you across the time line with the most incredible line of Nixie clocks available today! Yes, a vintage Nixie clock with GPS time synchronization... and a whole lot more! From a hand crafted fine furniture quality Teak & Maple base to a futuristic see-through base, you will be amazed!

**See pages 8-10 for details!**



## Ultimate 555 Timer/Oscillator

Unlock the full potential of the classic 555 timer IC with this incredible new kit! Now it's easy to drive relays, configure settings and modes and a lot more!  
(page 36)

**from \$21.95**



## Air Pressure & Elevation Sensor

Measure elevation to one third of an inch, measure pressure to greater than 0.0001kPa! High resolution real-time display of air pressure changes on the fly.  
(page 32)

**only \$239.95**



## Super-Pro FM Radio Station Kit

When you are looking for a complete solution, the famous FM100 FM stereo broadcaster does it all! Not just a transmitter but a mixer with mic ducking!  
(page 5)

**only \$269.95**